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A National Environmental/Energy Workforce Assessment. Alaska

National Field Research Center, Inc, Iowa City, Iowa

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A National Environmental/Energy Workforce Assessment

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16. ABSTRACT

This study is one of 70 volumes assessing the workforce needs (manpower needs) for pollution control and abatement in the United States for the five-year period of 1976 through 1981. Seven fields for pollution control — air, noise, pesticides, potable water, radiation, solid waste, and wastewater — are analyzed, together with energy-related programs currently accentuated by the national effort to solve energy supply problems.

Designed as Phase I of a three-phase program, the complete assessment includes the following volumes: one each for the 50 states, the District of Columbia, Puerto Rico, and the Virgin Islands; one for each of the ten EPA regions; a one-volume National Abstract; a volume on National Legislation; a volume on Business and Industry; and a four-volume National Summary. The information was gathered through extensive personal interviews with responsible federal, state, and local officials in every state; with officials of representative private industrial and commercial firms; and with representatives of national industrial and trade organizations.

Phase II will develop a broad national inventory of the entire range of post-secondary and higher education training offered in the pollution control and energy areas cited above, and Phase III will offer demonstrations for curriculum changes or modifications which appear necessary to assure an adequate and properly trained national environmental/energy workforce.

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WORKFORCE ASSESSMENT

for

ALASKA

Conducted by:

NATIONAL FIELD RESEARCH CENTER, INC

Under Grant from:

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Grant #T900591010

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Also appreciated are the respondents to our inquiries throughout Alaska's industrial and business community.

PREFACE

This report identifies existing workforce levels, training programs, career opportunities, and future staffing level projections (1976 - 1982), based on the information available for the State of Alaska in the environmental pollution control areas of air, noise, potable water, pesticides, radiation, solid waste, wastewater, and energy. This study was conducted for the United States Environmental Protection Agency by the National Field Research Center, Inc., Iowa City, Iowa, and the Seattle Regional Office.

The information contained in this report was compiled through extensive on-site interviews with professionals working in the respective areas noted above and with telephone interviews and literature research in all areas.

FOREWORD

This state report is a summary of Phase I of the NATIONAL ENVIRONMENTAL/ENERGY WORKFORCE ASSESSMENT project in Alaska. The information contained within this report was obtained by extensive on-site interviews and research of project related materials. The information retrieval was conducted through representative federal, state, and when time allowed, local agencies. Telephone and written surveys were utilized as a secondary research source.

Data which is not documented herein is representative of the best professional judgements of experts currently working in the field.

This study is designed specifically for use as a reference tool at the federal regional level as well as at the state level. It is anticipated that the people of the State of Alaska will be the beneficiaries of this endeavor.

National Environmental Energy
Workforce Assessment

Phase I

ALASKA

State Summary

I. AIR

Within the State of Alaska, the Department of Environmental Conservation, Air Quality Section, maintains regulatory responsibilities concerning the control and abatement of air pollution.

In addition to the regulatory efforts of the Department, the municipal boroughs of Fairbanks and Anchorage provide support through local air pollution control agencies.

Public sector workforce activity involves 15 professional personnel. This workforce consists of engineers, technicians, inspectors, and administrators. Due to the limited amount of industrial activity, private sector workforce levels are expectedly low, although specific figures were not available.

Future workforce projections indicate that over the next five years five additional staff positions will develop in response to increased regulatory responsibility.

Currently, only limited training activity in air pollution is available. As technological advances in pollution control equipment continue, a need for upgrade training is expected to develop.

Considering that potential resource development activity is expected to expand dramatically in years to come, and in view of the delicate environment in which this activity is anticipated to occur, increased planning, monitoring and regulation enforcement of air quality standards will be necessary to ensure the maintenance of a quality environment for Alaska's inhabitants.

II. NOISE

In Alaska, as noise is not considered a statewide problem at this time, regulatory activity is contained within municipal ordinance enforcement.

Currently there are three Alaskan cities which have noise regulations. Juneau and Ketchikan have regulations pertaining to the area of nuisances only, while Anchorage has regulations pertaining to the areas of nuisances, vehicles, and recreational vehicles.

As the noise control area is a low priority, the workforce figures reflect this. Even though Juneau, Ketchikan and Anchorage all have municipal noise ordinances, Anchorage is the only municipality that has a full-time staff position, this occupied by an environmental field officer. The other cities allocate staff efforts on an occasional basis only.

According to field sources, workforce activity on the state and local level is not expected to change dramatically over the next five years. The possible addition of two staff positions in Anchorage does exist, however, this possibility is contingent upon adoption of a recently proposed noise ordinance.

There are no formal training or certification programs presently available in noise, but future education of the public is planned for Anchorage residents with the adoption of the proposed ordinance.

III. PESTICIDES

The Department of Environmental Conservation, Terrestrial Programs Section, is the principal regulatory agency responsible for the control and abatement of pesticide pollution.

Statewide workforce figures involve two professionals within the Department and an estimated 212 individuals within the private sector. The Department staff holds degrees in the biological sciences area. Private sector personnel figures are based on present certification levels.

Workforce projection information indicates no growth at the state regulatory level and extremely limited growth within the private sector.

The State Cooperative Extension Service, in conjunction with the University of Alaska, provides certification training activities. In 1975, over 150 pesticide applicators and other personnel involved in pesticides and broadcast chemical work were trained in pesticide selection, handling, and application.

Job opportunities, while limited, will continue in the area of pesticide application. Federal decisions concerning classification of restricted-use pesticides may also impact future job opportunities. As pesticide technology becomes increasingly specialized, highly trained professionals will be needed to research and investigate the effects of new and multiple-use pesticides. Even then, agriculture development continues to be hampered by limited local market conditions, high clearing and development costs, insufficient crop lands, and climatic conditions.

IV. POTABLE WATER

In Alaska, the authority to develop, implement, and enforce safe drinking water standards is vested in the Department of Environmental Conservation, Water Programs Section.

Public sector workforce activity involves the efforts of eight professional personnel. This workforce consists primarily of sanitary engineers who provide planning, management, and enforcement efforts.

Presently, private sector workforce activity is limited to water treatment plant operators. Because certification of water treatment personnel has not yet been accomplished, specific private sector workforce figures are not available.

Public sector workforce projections indicate a growth in staffing positions by an additional ten over the next five years. Six of the ten positions will be involved with implementation of the Village Safe Drinking Water Act.

Although private sector workforce is expected to experience growth, projections based on the limited information available would be speculative.

A mandatory certification program for water treatment plant operators was established through legislation in 1976. The provision of training pursuant to certification is expected to necessitate a dramatic increase in training efforts at both the state and local levels.

V. RADIATION

Regulatory authority for the control and abatement of radiation pollution is presently vested within the Department of Health and Social Services, Environmental Health Section.

Currently no full-time staff have been assigned to the radiation control program. However, sources in the field have suggested that within the next five years, at least one full-time professional position will develop. This position is expected to be filled by a radiation physicist.

Considering the simplicity of the current program and the limited growth anticipated in the future, no current or future training activities are expected to be provided regarding radiation pollution control.

Although no specific private sector workforce figures are available, activity is expected to be extremely limited due to the minimal use of radiation by Alaska's industrial concerns.

Career potential is expectedly going to be extremely limited at the public sector level. However, the possible generation of private sector career opportunities may develop for persons trained as radiation control technicians in response to future uranium mining activities.

VI. SOLID WASTE

The Department of Environmental Conservation, Terrestrial Programs Section, in conjunction with the Field Operations Section, develops and maintains the State solid waste management program. A total of eight full-time professional staff are involved with solid waste activities. This workforce consists primarily of engineers and scientists. Specific information concerning waste collection and disposal workforce levels was not available. However, estimates based on disposal site permits indicate a disposal site operator workforce of approximately 130 persons.

Workforce increases are expected to involve the addition of eight professionals to the public solid waste workforce. This is expected to be in response to the implementation of the State solid waste management plan, and to federal legislation concerning the Resource Conservation and Recovery Act.

Although training needs have been identified, specialized training for solid waste personnel is not available.

Sources in the field have suggested that only through the provision of solid waste management training can an effective municipal solid waste management effort be developed. The Department anticipates an extensive training program for both municipal decision-makers and for operators of municipal solid waste disposal facilities, which presently is contingent on EPA funding.

VII. WASTE WATER

The Department of Environmental Conservation, Division of Water Programs, is the principal state regulatory agency responsible for the control and abatement of waste water pollution.

This section maintains a workforce of 18 people in waste water. These professionals include engineers, chemists, hydrologists, and laboratory technicians.

Private sector involvement in this area include both municipalities and The Alyeska Pipeline Service Company. The current workforce of municipalities can, at this point, only be measured through operator certificates awarded. There are 71 waste water treatment plant operators who have been certified and 90 who are working under contract with The Alyeska Pipeline Service Company.

Workforce projections show an increase of six professional positions at the public level over the next five years. Alyeska Pipeline Service Company expects to reduce their waste water workforce to approximately ten persons as construction activities are completed over the next five years.

Due to continued construction of new facilities and the modification of existing treatment facilities, job opportunities will be substantial for plant operators. Occupational upward mobility is expected to be made available through the mandatory certification program which was established in 1976. Certification is expected to provide a greater sense of professionalism to the operators in the field.

VIII. ENERGY

Within the Department of Commerce and Economic Development, the Division of Energy and Power Development has been established as the principal agency responsible for the development of a planned, integrated system of power development in Alaska.

At the present time, the energy program is staffed by five full-time professionals and supplemented by nine temporary positions. Volunteers are temporary personnel working through the federal ACTION program. In addition to the six temporary voluntary positions, one conservation specialist and two scientists are considered temporary positions.

Total full-time staff involves two social science professionals, one journalism professional, one civil engineer, and one Master's level economics professional.

Over the next five years, the Energy Office anticipates the addition of six professional positions. Specific future activities which are expected to necessitate additional workforce resources include energy conservation, fuel allocation, energy planning and analysis, and energy research and development.

At this time no training efforts have been developed. In the future, public education is expected to be a major component of the energy conservation program. Although specific training methods are not yet developed, planned efforts include motivation of consumer conservation, promotion of conservation guideline use in communities, and the provision of seminars on conservation technology application.

STATE OF ALASKA - SUMMARY

National Environmental/Energy Workforce Assessment
Pollution Control & Abatement Personnel
Projected Workforce Requirements (1976-1981)

Environmental Area	1976	1977	1978	1979	1980	1981	%/annum growth (average)
AIR	15	16	18	19	20	20	6%
NOISE	1	1	3	3	3	3	n/a
PESTICIDES [1]	214	214	214	214	214	214	0%
POTABLE WATER [2]	8	16	17	18	18	18	22%
RADIATION	.5	.5	1	1	1	1	20%
SOLID WASTE [3]	8	11	14	14	16	16	16%
WASTEWATER [4]	18	20	21	23	24	24	6%
ENERGY	5	5	8	9	11	11	20%
TOTALS	269.5	283.5	296	301	307	307	3%

[1] The above includes 212 private sector workforce personnel.

[2] The above does not include private sector water treatment plant operators for which projections were not available.

[3] The above does not include 130 private sector solid waste disposal site operators for which projections were not available.

[4] The above does not include 161 private sector waste water treatment operators for which projections were not available.

EDUCATION

The subarctic climate and sparse population of Alaska result in unique academic and research potential. Some areas of the state are rapidly developing their natural resources, while major adjacent areas are essentially wilderness. This lends itself to controlled studies of the effect of man on his environment, a situation not available in most geographical areas of the country. Recent decisions on the Trans-Alaska Pipeline and the Alaska Native Land Claims Settlement have emphasized the need for maximum environmental control and protection.

The leading institution of environmentally-related programs is the University of Alaska. It consists of several senior and community level institutions as well as various related or affiliated research facilities, among them the Environmental Quality Laboratories, the Institute of Social and Economic Research, the Institute of Water Resources, and the Forest Soils Laboratory.

Academic programs available include Land Resources, Wildlife Management, Oceanography and Ocean Engineering, Water Resources, Mining Engineering, Civil Engineering, Arctic Engineering, Engineering Management and Science, Biology, Chemistry, and others.

In the State Report, two of the programs are examined in detail. The schools which are outlined include the University of Alaska, Fairbanks and Kenai Community College.

LEGISLATION

The environmental/energy legislation for Alaska was obtained by request from various agency personnel and through various library references. Summaries of the legislation deemed most relevant to the eight subject areas of the workforce assessment were prepared, and are included in the respective state reports. The following list of laws represents virtually all environmental legislation for the state. Only certain of the following laws were summarized; the list is presented to show, by title, the kinds of laws which have been enacted.

Department of Environmental Conservation Act

Water, Air and Environmental Conservation Act

Operator Certification Law

National Environmental Energy Workforce Assessment

Phase I

ALASKA

State Report

STATE PROFILE

Alaska is a rugged, wild, austerely beautiful land of majestic mountains and deep, high-walled fjords; of slow-moving glaciers and still-active volcanoes; of dense, coniferous forests and desolate, treeless islands; of hot springs and icy streams. It is a land of contrasts, with extremes of wind and sun, snow and rain, heat and cold.

Alaska is a land caught in the crosscurrents of change. It is no longer a territory relying for almost all its income on federal government expenditures. It is now a fully responsible state seeking a more stable and self-sufficient economy based on its rich and varied natural resources. The old Alaska of gold-rush camps, sourdough, dog teams, and seal-hunting Eskimos has given way to a new Alaska of modern cities, electronics technicians, oilmen, construction workers, and jet air travel. The Last Frontier, as Alaska is called, is still a land of excitement and challenge.

This state occupies the largest peninsula in the Western Hemisphere, and includes the Aleutian Islands, a long chain of islands that arcs westward across the Pacific Ocean for about 1,000 miles.

With a total area of 586,412 square miles, Alaska is a large area north of an imaginary line from the Seward Peninsula through Fort Yukon to the Canadian border lying within the Arctic Circle. Alaska's Little Diomede Island in the Bering Strait is about 2 1/2 miles east of Big Diomede Island, or Ratmanov Island, which belongs

to the Soviet Union. Fairbanks, in the center of the state is about 3,265 miles by air from New York City, 4,520 miles from Peking, China, and 4,230 miles from Moscow, USSR. This key position, at the northern end of the Pacific Ocean and close to Asia, is a major factor in Alaska's continued strategic importance.

The economy of Alaska is currently undergoing a gradual shift away from heavy dependence on military and defense spending toward development of the state's abundant natural resources, particularly the vast oil deposits discovered during the 1960s.

Government work, at the federal, state, and local levels, is the principal source of employment in Alaska, engaging about 39% of the state's nonagricultural workforce in 1971. About 17% of the non-agricultural workers are employed in wholesale and retail trade, about 13% in service industries, and about 10% in transportation and public utilities. Manufacturing employment accounts for an additional eight percent, construction for about seven percent, finance, insurance, and real estate for about 3.5%, and mining for about 2.5%. Employment in agriculture and fishing and self-employment account for the balance of the civilian workforce.

Throughout modern Alaska's brief history economic development has been tied to lines of transportation, first the ocean and then the rivers, railroads, highways, and airfields. Alaskans find it expensive to maintain a standard of living that most Americans in the other states take for granted, because many everyday products have to be imported.

According to the 1970 national census, Alaska's population was 303,173, including military personnel, and Alaska ranked 50th among the

states in population. This represents an increase of 33.6% over the 1960 population of 226,167. In 1970 about 18% of the total population was composed of Eskimos, Aleuts, and Indians.

Alaska is still the most sparsely populated state, and has fewer than three persons for every five square miles. Most of the people live along the coasts and the river valleys. Some sections of the Interior and Arctic Slope regions remain uninhabited. Four to five of every ten Alaskans live in urban areas, where the population is increasing about three times as fast as in the rural areas. Since the early days of settlement, the cities and towns of Alaska have attracted comparatively more immigrants than the rural areas.

Alaska's economic base has undergone many changes over the past 70 years, from the gold rush days of 1896 to the oil rush of the 1970s. Commercial fishing, which was begun in the 1870s, was the first major economic activity developed in Alaska. However, because fishing activities were not regulated, overfishing occurred, resulting in a serious depletion of stock. The use of giant fish traps, with which enormous catches were made, was not abolished until Alaska became a state in 1959.

Despite overfishing, Alaska still ranks as one of the four leading fishing states in terms of both value and quantity of the annual catch. The salmon catch accounts for about 80% of Alaska's total annual catch by value. Although the quantity of salmon has declined since the years before World War II, the value has increased because the market price for salmon has risen. Most of the salmon are taken

in the waters of southern Alaska. In addition, herring and halibut are caught in the Alaska Panhandle. Shellfish are also an important fishery product in Alaska. Most of the shellfish caught are shrimp, king crab, and Dungeness crab. In 1971, the total catch in the state was 470,830,000 pounds, valued at $85.5 million. A large part of the catch is landed at Kodiak, where the most important species caught include king crab, salmon, and halibut.

Natural gas was discovered in 1949 near Point Barrow on the Artic (North) Slope. Oil was first discovered on a commercial scale in the Swanson River area of the Kenai Peninsula in 1957. Other major discoveries followed as exploration was undertaken throughout Alaska as well as in the offshore waters in Cook Inlet and along the northern coasts. The Cook Inlet area is one of the world's most important offshore oil production sites. In 1968, what may be the largest deposit of oil in North America was discovered in the Prudhoe Bay area of the Arctic Slope. In 1973, the federal government authorized construction of an 800-mile-long pipeline that could carry 2 million barrels of crude oil per day from the Prudhoe Bay area to the ice-free port of Valdez on the southern coast.

In the future, Alaska is expected to become a major source of natural resources. However, the economic and environmental impacts of this commercial activity are yet to be fully realized.

ALASKA POLLUTION CONTROL AND ABATEMENT AGENCIES

The Department of Environmental Conservation is the lead agency in pollution control and abatement. It is charged by statute to develop a comprehensive environmental plan for Alaska and reviews all major development activities in the state to minimize or preclude adverse environmental impacts.

Broad regulatory authority has been given the Department in the areas of water quality control, water supply, air quality control, solid waste management, oil spill prevention, pesticides and hazardous substances control, land damage and land and subsurface pollution prevention and radiation protection. In addition, the Department manages several water and sewer construction and the village safe water facility construction programs.

Within the Department are several divisions which handle specific areas.

The Division of Water Programs is responsible for planning, establishing and carrying out programs to conserve and enhance the state's marine and fresh waters and to protect them from pollution. The discrete but interrelated programs include prevention and control of domestic and industrial liquid waste discharges, surveillance of water quality, issuance of permits to control liquid waste discharges, management of state-federal construction grant programs to build water and waste water treatment plants, management of the Village Safe Water Construction Program in remote Alaska and assistance in developing potable water supplies.

The Division of Terrestrial Programs combines the areas of environmental concern in evaluating the effects of development on land and air resources of the State. The Division is responsible for resolving environmental problems in the areas of air pollution, solid waste management, land use, geologic and soils problems, plant and animal ecology, environmental effects of terrestrial resource development and utilization, land surface modification, and pesticides and hazardous substance usage.

The Field Operations Division's effectiveness determines the success or failure of the state's environmental effort. It is through the field staff that the Department's programs are carried out and local interests are determined and protected. They serve as the Department's primary contact with the general public, industry and local governments. In addition to responding to complaints and inquiries, day-to-day operations include: reviewing plans, conducting surveys, analyses, inventories, preparing reports and assisting industry and the general public in accomplishing their goals. The Field Operations Division issues required permits and monitors the direct and indirect environmental impact of the Trans-Alaska Pipeline, Prudhoe Bay field development and off-shore exploration activities.

The Water and Wastewater Works Advisory Board consists of nine members who advise the Department of Environmental Conservation on the training of water and wastewater works operators, and on regulations governing such works.

Figure 1. DEPARTMENT OF ENVIRONMENTAL CONSERVATION, Organizational Chart

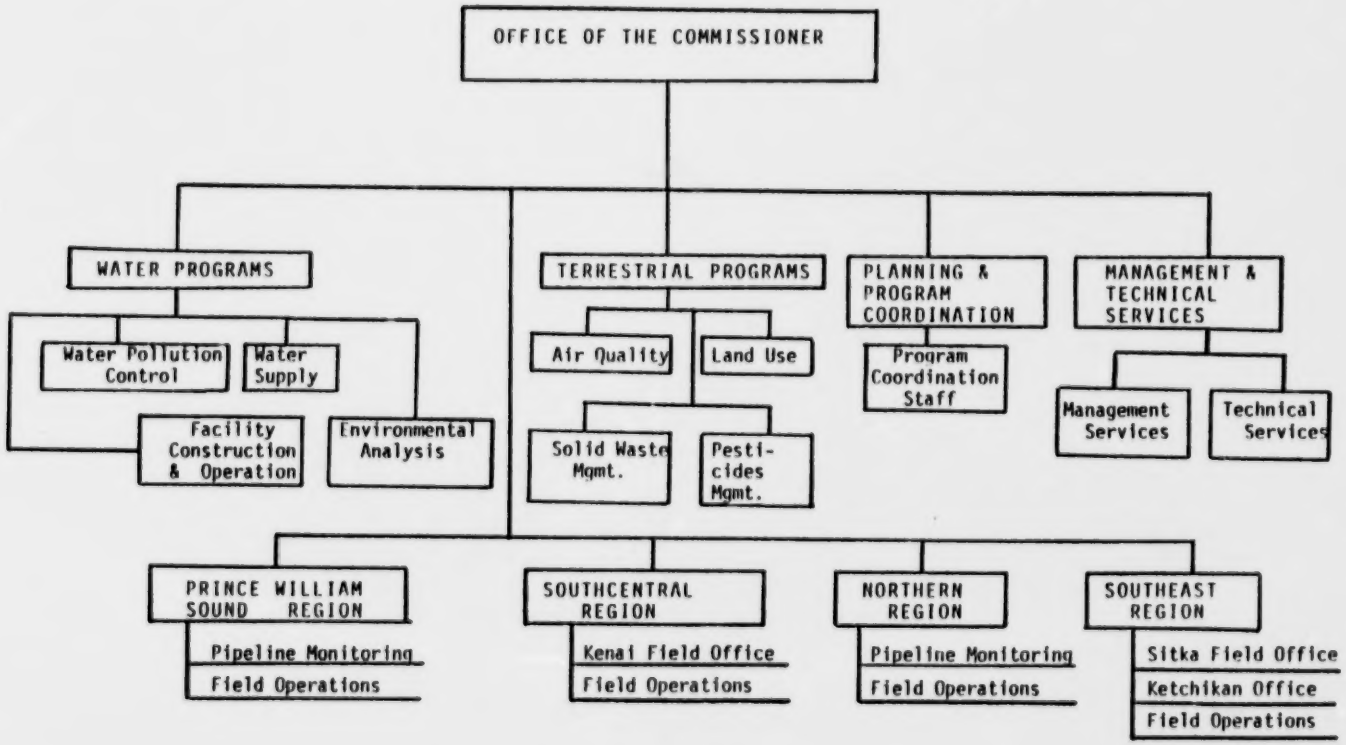
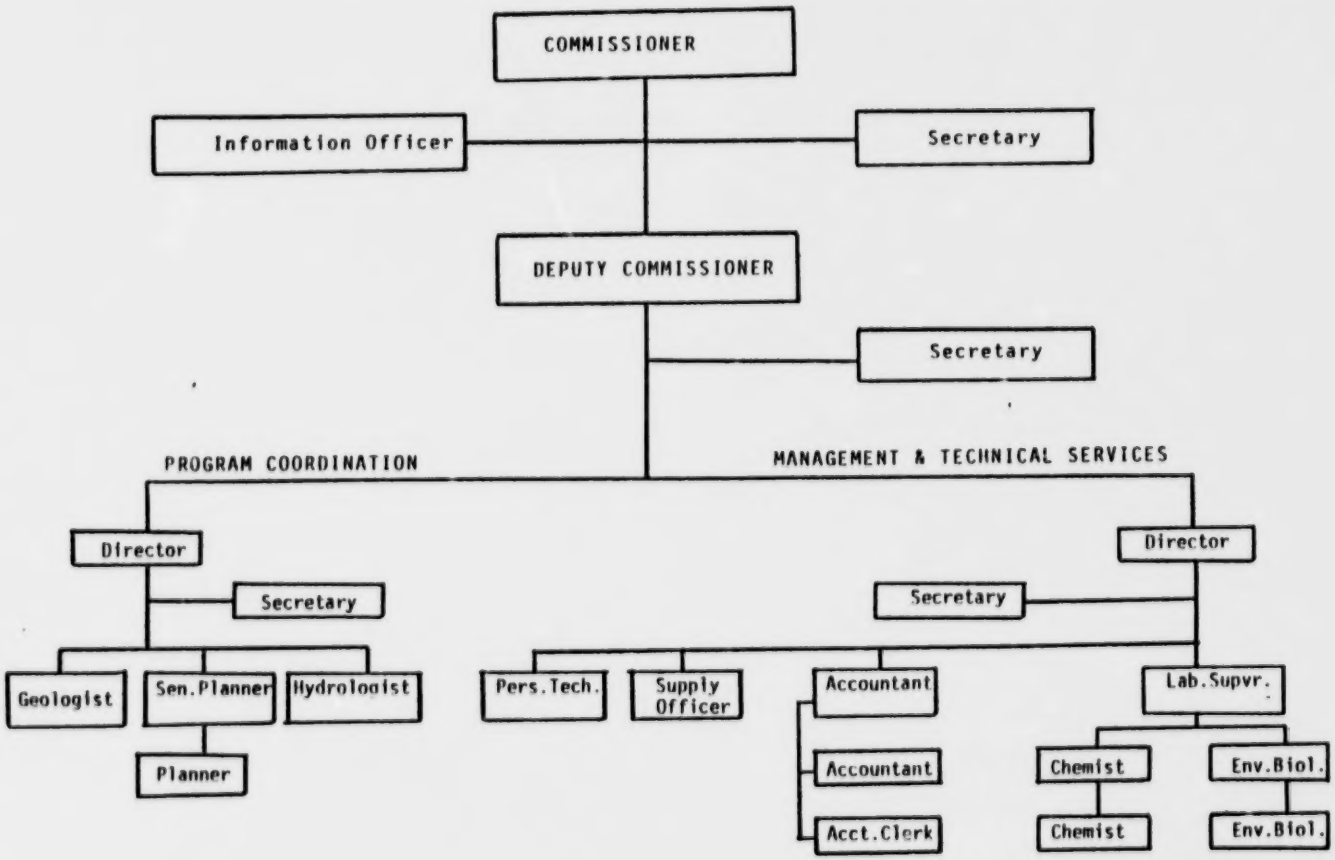


Figure 2. DEPARTMENT OF ENVIRONMENTAL CONSERVATION, MANAGEMENT, COORDINATION & SUPPORT, Organizational Chart



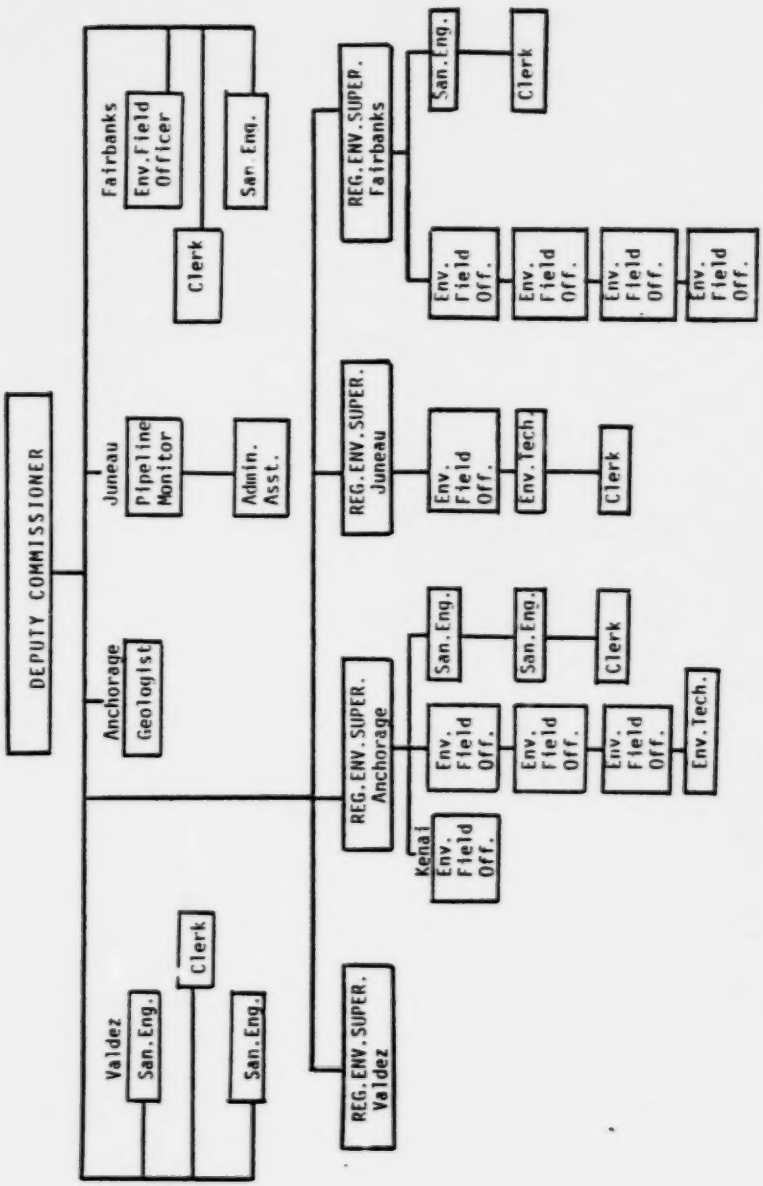


Figure 3. DEPARTMENT OF ENVIRONMENTAL CONSERVATION, Field Operations, Organizational Chart

Figure 4. DEPARTMENT OF ENVIRONMENTAL CONSERVATION, TERRESTRIAL PROGRAMS, Organizational Chart

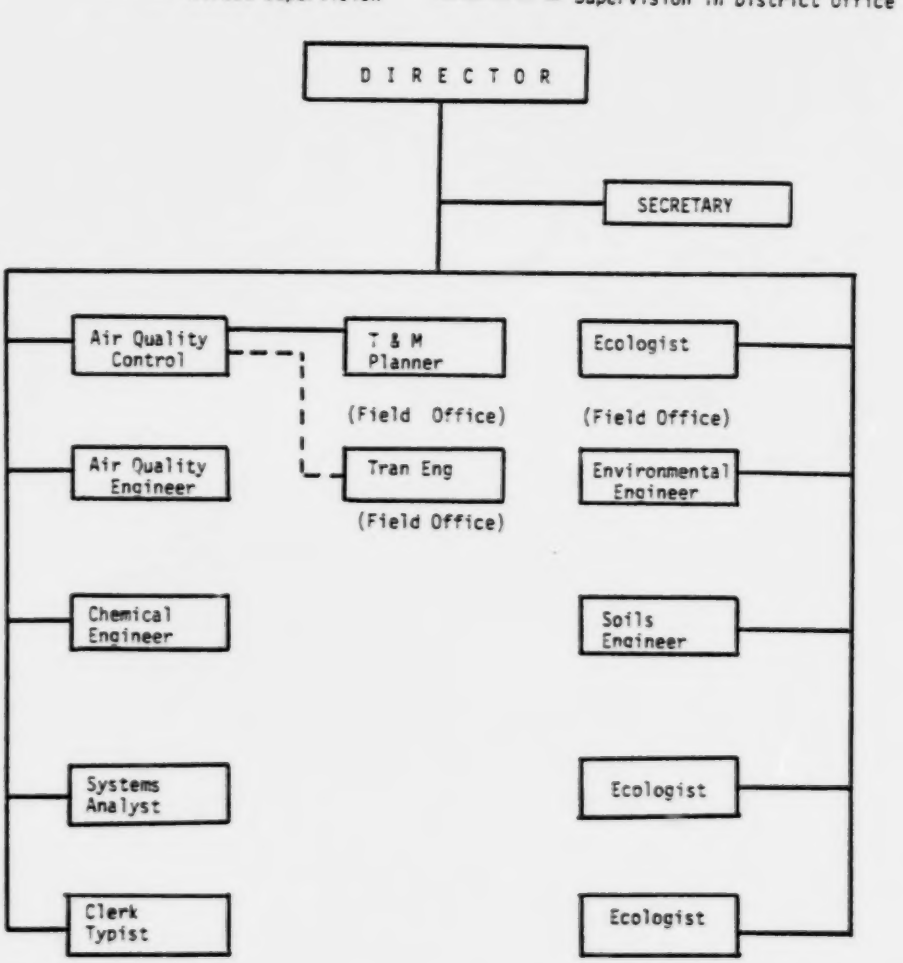
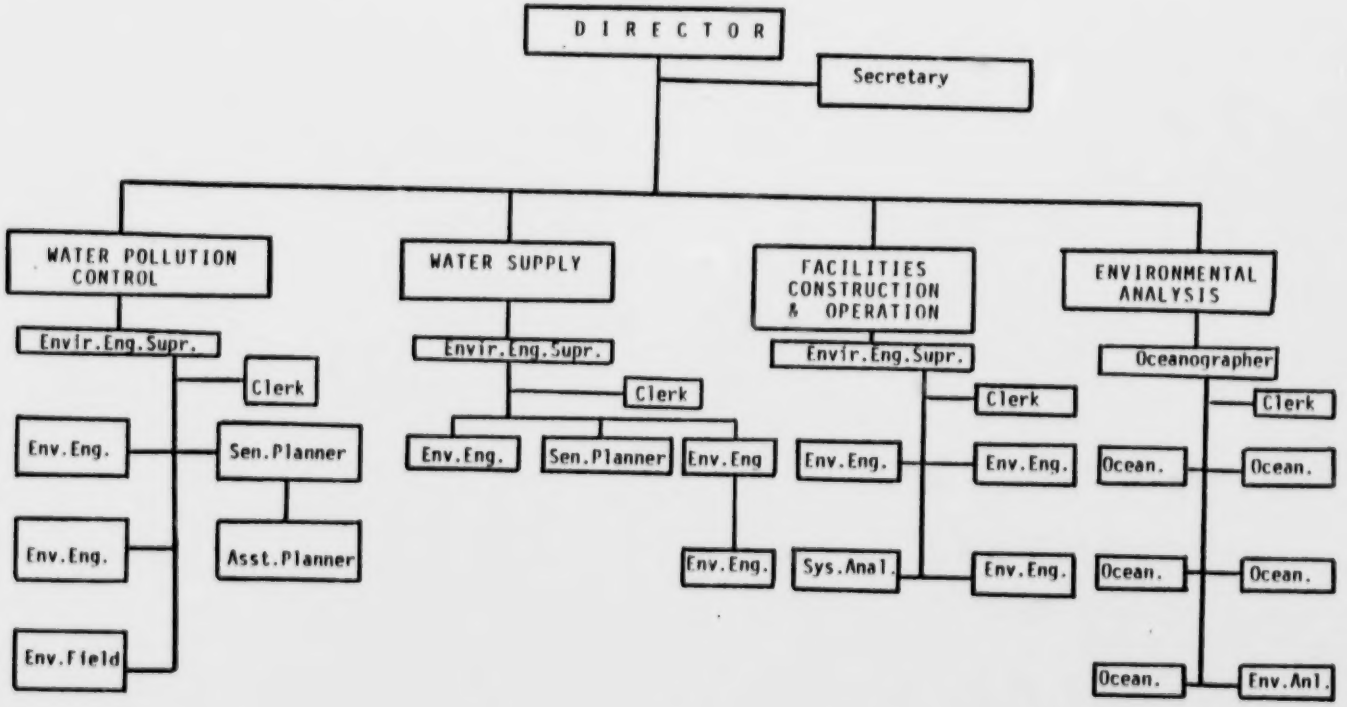


Figure 5. DEPARTMENT OF ENVIRONMENTAL CONSERVATION, DIVISION OF WATER PROGRAMS, Organizational Chart



Pollution Control and Abatement Programs

I. AIR

A. Introduction

It is the policy of the State of Alaska to conserve, improve, and protect its natural resources and environment. Of primary importance to the citizenry is the control of water, land, and air pollution, in order to enhance the health, safety, and welfare of the people of the state and their overall economic and social well-being.

In an effort to promote this policy, the Department of Environmental Conservation (DEC) has been delegated the authority and responsibility to develop and to administer state programs which, through the enforcement of stringent air quality regulations and the issuing of operating permits, can and will provide high quality ambient air to the inhabitants of the state.

In Alaska today, most stationary air pollution sources are in compliance with state regulations, including drilling platforms, incinerators, industrial processes, and power plants. Several other source categories, such as pulp mills and tepee burners, are in the process of achieving compliance status. Compliance will be accomplished by means of adherence to stringent schedules and requirements established by the Department of Environmental Conservation as conditions of operating permits.

Alaska's most severe air pollution problems are located in the cities of Fairbanks and Anchorage. Carbon monoxide from auto exhausts

are trapped in these cities by local meteorological combinations of air inversions and extremely cold temperatures. This is especially true in Fairbanks, where, during the coldest periods, people leave cars idling for long periods of time. Progress is being made, however, and a number of solutions, such as mass transit, parking control, traffic routing, and emergency episode planning are under consideration. These solutions require the understanding and cooperation of residents as well as extensive planning and coordination among state, federal and local agencies.

In addition to the regulatory efforts of DEC, the municipal boroughs of Fairbanks and Anchorage provide support through local air pollution control agencies. Total state and local air pollution control staffing activity necessitate employment of 15 full-time professionals.

Extensive planning activity related to the environmental impact of offshore oil recovery has been a high priority of the DEC over the past two years. The following is an excerpt from the Seventh Annual Report of the Council on Environmental Quality, 1976, which gives some background on this subject in Alaska.

> In response to coastal state impacts and other concerns, the 94th Congress considered extensive revision of the Outer Continental Shelf Lands Act, the governing legislation for federal offshore and gas activities. Both the Senate and the House passed versions of the legislation that would significantly modify leasing procedures, environmental study and assessment requirements, regulatory procedures, and the role of the states.
>
> The most controversial of sales in frontier areas was that planned for the Northeast Gulf of Alaska in early 1976. The Gulf of Alaska Outer Continental Shelf is one of the most environmentally sensitive of

> the frontier regions and has some of the worst offshore operating conditions in the world. In December, 1975, EPA Administrator Russell Train relayed to CEQ his determination under Section 309 of the Clean Air Act that sale, as proposed, was environmentally unsatisfactory. After a detailed review of the relevant facts, on January 23, 1976, the Council recommended to the Interior Department that the most environmentally desirable course of action would be to delay the sale for up to 2 years. This delay would allow leasing decisions to be based on better environmental information and would allow more time to plan for onshore impacts. If this recommendation was not acceptable, the Council recommended limiting the sale to approximately 150,000 acres in the northeasternmost, and least environmentally vulnerable, zone of the proposed sale area.
>
> In an attempt to enjoin the sale, the state of Alaska filed suit in March 1976. Alaska's motion for an injunction was denied. The court pointed out in its findings that the "Secretary (of the Interior) considered the environmental concerns of CEQ, but that he decided to proceed with the lease sale in light of his broader responsibilities to balance the nation's energy needs against potential environmental and socio-economic impacts." The Alaska sale was held on April 13, 1976, resulting in the leasing of about 400,000 acres, less than anticipated by the Interior Department.

In a sense, this action was an environmental trade-off, the provision of energy in exchange for relatively unknown ecological effects. At this point in time, although the physical picture of the Alaska Pipeline has been carved into the environmental landscape, very little energy in the form of oil or gas has yet to be provided.

B. Workforce Profile

The major efforts of the DEQ, Air Quality Control Section presently are aimed at bringing air pollution point sources into compliance with state regulations in conjunction with planning and developing strategy for the control of motor vehicle pollution. They, along with the

local air pollution control agencies of Anchorage and Fairbanks, utilize a workforce totaling fifteen people to accomplish this. The following table illustrates the current levels of staffing in all agencies.

TABLE I

ALASKA AIR POLLUTION CONTROL AGENCIES

State and Local
Current (1976) Staffing Level

Position	1976
Engineer	7
Technician	4
Inspector	1
Other	3
TOTAL	15

For the most part, personnel classified as engineers possess degrees in chemical engineering disciplines. Personnel listed in the category "Other" include two administrative positions and one attorney.

One of the most specialized disciplines involved with air pollution control is that of the air quality engineer. Because of the importance of this position, specific information concerning the qualifications and duties of this job have been provided as follows:

AIR QUALITY ENGINEER - STATE OF ALASKA

Definition: Under general direction, plans, implements and operates the state ambient air quality control monitoring and evaluation program.

Distinguishing Characteristics: The class of Air Quality Engineer includes positions which plan equipment installation, and set-up and monitor equipment used to study air quality. They perform physical testing and surveillance to gather air quality information. (The class of Air Quality Physicist, on the other hand, includes positions which perform comprehensive studies of atmospheric and related conditions in the field, inspect facilities and enforce air quality standards.)

Examples of Duties: Establishes ambient air monitoring locations, equipment specifications and type, equipment maintenance and calibration procedures and schedules, and laboratory analysis procedures.

Plans, implements and finalizes evaluations of specific ambient air quality problems or conditions in the state, to include identification of the problem or condition to be evaluated, monitoring methods and locations to be used, types of instrumentation, and data analysis procedures.

Conducts and evaluates control strategies relating to particulate matter, carbon monoxide, sulfur dioxide, and ice fog.

Conducts air contaminant emission source tests as necessary to determine whether facilities in the state comply with the state air quality control regulations. May participate in air quality control enforcement and permit activities.

Investigates complaints and conducts field surveillance of air contaminant emission sources within the state.

Performs other related duties as required.

Knowledge, Skills and Abilities: Thorough knowledge of: Physics, chemistry, ambient air quality standards, air quality control criteria, and design and operation of air contaminant emission monitoring devices.

Knowledge of: Engineering concepts relating to design and performance evaluation of gaseous and particulate matter collection devices, air contaminant emission monitoring control standards, requirements of the 1970 Amendments to the Clean Air Act, emission control techniques for specific air contaminants, and inter-relationship of air contaminant emission control versus solid waste and water quality effects.

Ability to: Effectively plan and coordinate the work of others; apply required knowledge; function with high degree of independence; participate effectively in conferences and interviews; reason logically and draw conclusions; effectively convey information to technical and professional persons and the general public.

Minimum Qualifications: Graduation from an approved college with a major in engineering, and three years of professional engineering experience which included at least one year of environmental engineering.

Substitutions: Graduate study in environmental engineering may be substituted for the required experience on a year-for-year basis to a maximum of two years, except for the required year of environmental engineering experience. Additional engineering experience may be substituted for the required college education on a year-for-year basis.

C. Workforce Projections

Information for the workforce projections was obtained through interviews conducted with professionals in the field.

The problem of carbon monoxide air pollution from auto exhausts is possibly the most difficult problem facing regulatory agencies at this time. Progress is being made through in-depth planning and management involving mass transit, parking control, traffic routing, and emergency episode planning.

The Air Quality Supervisor has indicated that five additional air pollution control professionals will be needed in the next five years to facilitate and support these efforts. The following table provides workforce projections by professional position.

TABLE II

ALASKA AIR POLLUTION CONTROL AGENCIES

State and Local
Workforce Projections to 1982 (est.)

Position	1976	1977	1978	1979	1980	1981	%/annum turnover (average)	%/annum growth (average)
Engineer	7	7	8	8	9	9	5%	5%
Technician	4	4	5	5	5	5	5%	5%
Inspector	1	2	2	2	2	2	5%	1%
Other	3	3	3	4	4	4	5%	5%
TOTAL	15	16	18	19	20	20	5%	6%

D. Training and Certification

Although DEC does not offer regularly scheduled training programs, occasional public oriented training has been used in an effort to reduce auto emission problems.

Sources in the field have indicated that the majority of technical training is provided to the private sector through the pollution control equipment manufacturing industry. This training is provided on-site, one-on-one, for the most part.

E. Career Potential

In the air pollution control and abatement field, a limited workforce increase is projected to 1982 for the State of Alaska. This increase should occur primarily in the areas of planning and control of transportation related pollutants. Alaska's air pollution control field will be characterized by specialized occupational offerings during the next five years, but these are expected to be few in number. Highly competetive conditions are expected to prevail relative to the few available positions. Therefore, personnel with the highest of qualifications and experience will be most eligible for employment. These persons will be expected to have educational backgrounds in the traditional natural sciences, with emphasis in physics, chemistry, or mathematics. Good communicative skills, both oral and written, are and will continue to be important qualifications.

F. Conclusion

Resource development activity is expected to increase dramatically in the years to come. In view of the delicate environment in which this activity is anticipated to occur, increased planning, monitoring and regulation enforcement of air quality standards will be necessary to ensure the maintenance of a quality environment for Alaska's inhabitants.

II. NOISE

A. Introduction

There is current emphasis on the need for a national noise abatement strategy which calls for, among other things, the cooperation of state and local agencies in achieving this goal. In Alaska, as noise is not considered a statewide problem at this time, regulatory activity is contained within municipal ordinance enforcement.

According to Sound and Vibration, December, 1976, there are three cities in Alaska which have noise regulations. Juneau and Ketchikan have regulations pertaining to the area of nuisances only, while Anchorage has regulations pertaining to the areas of nuisances, vehicles, and recreational vehicles.

Currently, the Municipality of Anchorage has a newly proposed ordinance which will update and tighten existing regulations. The proposed ordinance allows the Department of Health and Environmental Protection to conduct studies and research on sound and vibration, educate the community on the causes and effects of noise, inform citizens about the ordinance, and encourage public participation in noise control. The Department would coordinate noise control activities of all municipal departments and may request another department to review a proposed action if it is inconsistent with noise control goals of the ordinance. Public and private projects would also be subject to the review process.

Inspections would be conducted by the Department with permission from the property owner. Where permission is refused for entrance to

property, the Department must obtain a search warrant after showing probable cause that a violation of the ordinance may exist.

The Department may also develop recommendations for regulation of product use and prohibition of sale where products do not meet sound emission levels specified in the ordinance. This provision applies only to products not regulated by the EPA. In addition, the Department has authority to prepare recommendations for designation of noise sensitive zones in the community.

Enforcement of the limits and prohibited actions authorized by the ordinance allow civil and criminal penalties to be imposed against violators. The model code as well as the proposed ordinance allows issuance of an abatement order for noise reduction within a reasonable length of time instead of a notice of violation, if the noise control office determines that more time is needed for the violator to reduce the noise. In special situations, the Department could order a halt to noise-causing activities when they are an immediate threat to health and welfare.

Another enforcement provision in the proposed ordinance suggested by the model ordinance allows for suits against alleged noise violators by citizens or against the Department if it fails to perform its responsibilities under the ordinance.

B. Workforce Profile

As the noise control area is considered to be low priority, the workforce reflects this. Even though Juneau, Ketchikan, and Anchorage

have municipal noise ordinances, Anchorage is the only municipality that is considered to have a full-time staff. That staff consists of a single environmental field officer. The other cities have allocated people on an occasional basis as needed to deal with noise.

C. Workforce Projections

Sources in the field have indicated that while there is the development of a national noise abatement strategy, activity on the state and local level is not expected to change dramatically over the next five years.

As Anchorage is the only municipality which is updating and expanding its noise regulations, an increase in staff can be expected if the proposed ordinance is adopted. This increase is projected to be two additional persons who will most likely be involved in inspections and enforcement.

D. Training and Certification

There are no formal training or certification programs at the present time in noise. Future education of the public is planned for Anchorage residents with the adoption of the proposed ordinance.

E. Career Potential

Limited career opportunities are expected to develop for people in this field. In response to the national noise abatement strategy, there should be limited openings for planning and enforcement personnel,

as well as inspection personnel on the state and municipal level. Professional disciplines that will be required of these people will include acoustical engineering, environmental engineering, community planning, and law enforcement.

F. Conclusion

The Noise Control Act of 1972 directs the EPA to give technical assistance to state and local agencies and the general public in conjunction with coordinating federal noise abatement activities. As Alaska does not consider noise a high priority problem, there is not much activity occurring on state and local levels at the present time. When national strategy programs are implemented, job opportunities will develop to an extent. With the proposed adoption of the Anchorage noise ordinance and its corresponding public education program, Alaska is progressing in the area of environmental noise control.

III. PESTICIDES

A. Introduction

The Department of Environmental Conservation, Terrestrial Programs Section, is the principal regulatory agency responsible for the control and abatement of pesticide pollution. Certification and training are key components of the Department's pesticide program, which is designed to ensure that the use of pesticides and other broadcast chemicals does not result in environmental pollution or health hazards. In Alaska, mosquito control, rights-of-way, clearing, vegetation control, and agriculture are the primary uses of pesticides.

Currently, the Department is developing a plan which calls for certification of persons who wish to use pesticides classified for "restricted use." Under the plan, training and/or examinations will be required for certification. Permits will be required for public pesticide use programs, for projects in which pesticides are intentionally added to the waters of the state and projects in which pesticides are applied by airplanes or helicopters.

Specific departmental authority involves the following activities:

- Regulate the transportation, testing, inspection, packaging, labeling, handling and advertising of pesticides and broadcast chemicals offered for sale, or placed in commerce for use in the state;
- Regulate and supervise the distribution, application or use of pesticides and broadcast chemicals in any state project or program, or by a public agency under the jurisdiction of the state; and,
- Regulate or prohibit the use of pesticides and broadcast chemicals.

In addition, the Department may provide by regulation for the licensing of persons and require a surety bond or liability insurance for those engaged.

B. Workforce Profile

The pesticides program within the Department is currently staffed by two professionals, one with a degree in biological science and one chemist. At the present time, the private sector workforce (mostly occasional pesticide users) are estimated to total 450 individuals. This estimation is based on present certification levels. Table III identifies this workforce by certification classification.

TABLE III

DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Terrestrial Programs
Pesticides Personnel
Current (1976) Staffing Level

Classification	1976
Commercial	250
Private	200
TOTAL	450

C. Workforce Projections

Sources in the field have indicated that no workforce changes will occur at the state regulatory level over the next five years.

The number of restricted-use pesticide applicators is not anticipated to increase over the next five years, although federal decisions concerning the number of pesticides identified as restricted-use will influence the number of persons required to obtain certification.

D. Training and Certification

The State Cooperative Extension Service, in conjunction with the University of Alaska, provides training activities relevant to accomplishing certification. In 1975, over 150 pesticide applicators and other personnel involved in pesticide and broadcast chemical work were trained in pesticide selection, handling, and application. These training sessions are accomplished through short-term, one and two day training sessions. Because this is provided on a needs basis, specific information concerning future training activity was not available.

E. Career Potential

Although career opportunities are expected to be limited, federal decisions concerning classification of restricted-use pesticides may well provide future career positions. As pesticide technology becomes increasingly specialized, highly trained professionals will be needed to research and investigate the effects of new and multiple-use pesticides. Some job opportunities may develop in the area of pesticide application, however, agricultural development continues to be hampered by limited local market conditions, high clearing and development costs, insufficient croplands, and climatic conditions.

Public sector career opportunities available in the future will involve hazardous waste disposal, pesticide inspection, and research activities in integrated pest management technology. These activities will require personnel who have acquired degrees in biology, botany, and entomology.

F. Conclusion

The continual development of more potent short-lasting pesticides has forced the development of more stringent control standards and dramatically increased the importance of regulatory efforts. In response to technological advances within the pesticide industry, the professional workforce has developed a definite need for upgrade, state-of-the-art training. The provision of this training is one of the tasks facing pesticide regulatory authorities at this time.

IV. POTABLE WATER

A. Introduction

People must have accessible and adequate quantities of safe water for consumption. As national standards have been established and generally accepted as the basis for identifying and judging the adequacy of public water supplies, it is assumed that state water quality standards meet or exceed these criteria.

There are approximately 1,800 public water supplies in Alaska, of which as many as one-third may not meet national standards of adequacy for public consumption. The Department of Environmental Conservation is responsible for enforcing those federal and state laws which provide for these water supplies.

As part of its new Water Supply Program, the DEC Water Programs Section is developing revised regulations for public water supplies in Alaska. By requiring certain practices, such as proper well construction, protection of water sources, and water treatment and disinfection, the Department seeks to ensure that water which is provided in restaurants, schools, office buildings, apartment houses, trailer courts, towns and cities is safe to drink. Along with this, the Department hopes to decrease from 33% to 20% the portion of Alaska's population where health and general well-being are adversely affected by consumption of substandard water. At the same time, the DEC would like to decrease the number of public water supplies which, by national criteria, are substandard (from 33% to 20%).

The Department is also involved in conducting the Village Safe Water Act, which calls for provision of sanitation services in every village in the state. Currently, there are non-existent or substandard sanitation facilities in approximately 140 villages which are public health hazards. These hazards suppress the living standards of village residents and are destructive to the relatively unspoiled environment of rural Alaska.

The Department's objectives for FY 77 in this area are to reduce by three the number of Alaska villages where the health and general well-being of village residents are jeopardized by substandard sanitation facilities, to provide in three Alaska villages adequate and safe public water supplies and sewage treatment systems capable of at least secondary treatment, and public bathing and laundry services, and to ensure that all of the nine Village Safe Water Act facilities constructed by FY 78 operate without more than reasonable incidental failure.

The following lists the planned accomplishments, in areas other than the Village Safe Water Act, for FY 77 in the Water Supply Program.

1. Administration and Program Development. During FY 77 work will continue to establish a Public Water System Supervision Program (PWSSP) and to achieve primary enforcement responsibility. In this regard the following activities in administration and program development are planned:

    a. Proposed State Drinking Water Regulations are to be adopted by August of 1977. It is estimated that this activity will take at least 0.75 man-years in FY 77. Included in this activity is administration time to coordinate achieving primary enforcement responsibility.

b. Development of a State emergency plan, initiated in July 1976, will be completed about March, 1977. To complete the emergency plan, 0.35 man-years in FY 77 will be required.

c. A continuing item of work necessary for the State PWSSP is preparation of, and coordinating between, the State budget and the yearly PWSSP grant application to EPA. The expenditure of 0.4 man-years is estimated for this purpose.

d. Policy development in response to questions raised by State or Federal regulations, or unanticipated complications, is another area in which activity is anticipated. For this item, 0.4 man-years are budgeted.

e. An important tool to assure uniform execution of policy are guidelines for the design and operation, of public water systems. An 0.35 man-years of Department staff time and a $12,500 Development Grant will be required to prepare these guidelines.

f. Maintenance and preparation of records and reports required to administer the State PWSSP is a responsibility divided between the Department's field, laboratory, and headquarters personnel. As such, manpower expenditures for reports and records in the field and laboratory portion of the program are included with the estimates in sections 2,4,5, and 6.

g. Development of internal administrative procedures has been given a high priority. These procedures will be used to provide staff guidance on the routine functions necessary for the successful implementation of the State PWSSP. This work will require an estimated 0.55 man-years.

h. Maintenance of a continual communication and coordination program among headquarters, laboratory and field personnel. For this intradepartmental liaison effort, a total of 0.4 man-years has been budgeted. Activities in this effort include providing assistance with interpretation of policy matters regarding the granting of variances, enforcement proceedings, data handling, water system inventories, and other areas as needed.

i. A public information program will be made a specific part of the State PWSSP during FY 77. The purpose of this activity is twofold: water suppliers, public officials, and design engineers need to be knowledgeable about requirements; and, if the general public or interest groups are aware of the quality of their water and the legal tools available to them, they will more actively urge water suppliers to upgrade their systems. Approximately 0.45 man-years are estimated for this element.

2. Surveillance and Technical Assistance. This element includes the actual field work associated with implementation of PWSSP. The field work to be conducted falls under the broad category of sanitary surveys which encompass the following items:

   a. Upgrading and confirming information in the inventory of public water systems.

   b. Evaluation of each public water system to determine compliance with State water quality and construction standards.

   c. Providing technical assistance to the operators of public water systems on water treatment technology, maintenance of construction standards, the submittal and maintenance of reports and records, water sample collection, and application for variances.

   The resources necessary for this program element are estimated to be at the least, 15 man-days to conduct sanitary surveys for 24 community surface water systems, 76 community ground water systems, 26 non-community surface water systems, and 50 non-community ground water systems. These field activities programmed for sanitary surveys will require 2.9 man-years.

   Concurrent with each sanitary survey the inventory of nearby public water systems will be verified and upgraded. The inventory of public water systems is planned to be essentially complete by the end of FY 77 and require 0.4 man-years.

3. Plan Review. Alaska Statute requires that engineering plans for any new or modified public water system be submitted to the Department for approval prior to construction. This requirement will help ensure that all systems are constructed in accordance with accepted engineering practices so that standards of the State Drinking Water Regulations are met.

   The resources required for this element are based on an estimate that 150 plans will be reviewed. Based on past experience an average of 1.5 days per review can be assumed, 1.0 man-years are estimated.

4. Laboratory Certification. During FY 77 four private laboratories in the State are to be certified for analysis of organic and inorganic chemicals. Each certification is estimated to require .05 man-years. Therefore, 0.2 man-years will be devoted to laboratory certification in FY 77. One microbiological laboratory may be provisionally certified during this grant period.

   Prior to State certification of any private laboratories it will be necessary for the State to obtain its own certification from

EPA. During FY 77 EPA will be requested to certify two State laboratories. These include one Alaska Department of Health and Social Services microbiological laboratory and the DEC's organic and inorganic chemical laboratory.

5. Laboratory Capability. To meet the requirements for primary enforcement responsibility, the State is developing a laboratory capability to analyze all contaminants specified in the State Drinking Water regulations, with radioactivity analysis capability limited to alpha and beta counting. The capability to conduct radioactivity analyses depends on the State legislature approving a State FY 78 budget request for analysis equipment. The DEC laboratory will be used to analyze periodic check samples for quality control of certified private laboratories, to analyze non-routine samples collected during sanitary surveys and to perform analyses necessary to special studies.

   To complete this mission will require 1.2 man-years.

   The Department laboratory will not be involved in routine chemical analyses required by the Drinking Water regulations. This work will be done by the four private laboratories that are proposed for certification. There should not be a need for a private laboratory certified for radioactivity analyses during FY 77.

6. Enforcement. Enforcement activities are necessary to obtain compliance with the State Drinking Water Regulations. Public water systems in noncompliance will be identified during the system's sanitary survey or when it is noted that sampling frequencies are not being met. Actions by DEC field personnel necessary to correct noncompliance can range from a phone call to correspondence and, ultimately, court litigation. In addition to regulation enforcement, time requirements necessary to evaluate and process requests for variances are included in this element.

   It is estimated that enforcement will require 0.8 man-years and that these estimates are based entirely on variables impossible to predict with accuracy.

7. Data Management. A full-time data management position funded 50% by the PWSSP, will establish bacteriological and chemical data handling systems, coordinate this data transfer between headquarters and the field, and maintain a record keeping and file system on the status of all public water systems. The Regional offices will be involved in receiving data from water supplies, and feeding the data into the States handling system.

DEC is planning to use the data handling system being developed by EPA.

8. Disease Surveillance and Investigation. Resources necessary for this program element are difficult to predict, as there is no way to know in advance what will be required. The Alaska DHSS has a full-time epidemiologist who would lead investigative activities. In cases of suspected waterborne disease, DEC would provide engineering expertise to evaluate possible causes. While conducting sanitary surveys, DEC staff will evaluate water systems for their potential to transmit disease. In the FY 77 budget, it is estimated that 0.1 man-years will be required for this element.

9. Public Participation. Public participation is vital to a successful and responsive PWSSP. Opportunities for participation in FY 77 will occur when the State Drinking Water regulations are released for public comment prior to adoption, and in response to applications for variances as allowed by the regulations.

   Procedures that will be used to solicit public input in each of these situations are essentially the same; information on the proposal will be summarized in an informative document which will be published in newspapers and mailed with a cover letter to interested persons. Public input received will be considered prior to finalizing the proposal.

   In FY 77, there will be several opportunities for public participation when the proposed State Drinking Water regulations are released for hearing. Additionally, it is estimated that about 20 variances will be made available for public comment. Public participation is estimated to require 0.3 man-years.

10. Construction Grants. The construction grants program, administered by the Water Programs Division, has a direct and beneficial impact on public water systems in Alaska, and is therefore included to complete the total FY 77 PWSSP description.

    Alaska Statutes authorizes the Department to grant to municipalities, as funds are available, up to a maximum of 50% for eligible projects. These projects will be constructed in accordance with plans and specifications approved by the Department to assure compliance with the Safe Drinking Water regulations.

    This program is administered by three full-time engineers.

B. Workforce Profile

The Department of Environmental Conservation public supply regulatory activities are conducted by the Water Supply Section of the Water Programs Division. Total staffing levels consist of eight persons. Three are assigned to the main office in Juneau, while the remaining five have been allocated to field offices.

The field offices provide the Department's first contact with the general public, businesses and industries, and local government. The field staff also executes the majority of the activities involving enforcement and program implementation. In addition, the Fairbanks and Valdez offices are also responsible for surveillance of trans-Alaska pipeline construction. Relative to the pipeline construction, the DEC has issued permits to Alyeska Pipeline Service Company. Personnel assigned to the Fairbanks and Valdez offices are responsible for ensuring that conditions specified in the permits are being achieved.

The following table identifies the staff by discipline title.

TABLE IV

DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Water Programs Division
Water Supply Section
Current (1976) Staffing Level

Position	1976
Administrator	2
Engineer	6
TOTAL	8

The majority of the engineers are in the sanitation field and as previously mentioned, conduct enforcement activities. Until recently, these persons were entitled sanitary engineer I and II. Under a reclassification system these positions are now described as Environmental Engineer III and IV.

Current private sector involvement with potable water is limited almost entirely to Alyeska Pipeline Service Company activities. Actual workforce figures are not currently accessible. As pipeline construction nears completion, however, this workforce will decrease to a minimum.

C. Workforce Projections

With the continued establishment of the Public Water System Supervision Program and the Village Safe Water Act, personnel will increase by eight in 1977. Table V illustrates workforce projections to 1982 by discipline title.

TABLE V

DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Water Programs Division
Water Supply Section
Workforce Projections to 1982 (est.)

Position	1976	1977	1978	1979	1980	1981	%/annum turnover (average)	%/annum growth (average)
Administrator	2	3	3	3	3	3	5%	10%
Engineer	6	8	8	9	9	9	5%	9%
Other	0	5	6	6	6	6	5%	N/A
TOTAL	8	16	17	18	18	18	5%	22%

Sanitary and Environmental Engineers will continue to be in demand in order to fill current and projected engineering positions. The "other"

category will include chemists, oceanographers, and environmental field officers. Because environmental field officers will compose the majority of newly added positions, qualifications for class I and II officers are given below.

Environmental Field Officer I

Definition: Under supervision of a field officer of higher grade and in a learning capacity, investigates existing field conditions, to estimate the effects of existing and proposed activities on all aspects of the environment and potentials for air, water and land surface pollution, potential soils modification and marine involvement where indicated. Monitors and reports on developments affecting the environment in the regions to which assigned.

Distinguishing Characteristics: This is the entry level Environmental Field Officer class. As with other subjourneyman classes, supervision is initially close, but as training progresses, it is gradually relaxed.

Examples of Duties: Is in a training status and is given duties similar in nature to those of the next higher level; work is reviewed on a spot check basis for comformity with original instructions.

Assists and works with journeyman Environmental Field Officers in performance of duties similar to those listed below:

1) Locates, identifies, analyzes, monitors and reports on potential sources of environmental damage within the region to which assigned. By way of example only, sources might include industrial developments, urban expansion and development and utilization activities, waste discharges of all types, including landfills, construction projects, transportation and pipeline developments, and petroleum storage and pumping stations.
2) In conjunction with the Regional Engineer and the Department, determines potential environmental damage, determines measurements, analyses, etc., which might be taken to determine the extent, nature and/or existence of environmental damage resulting from identified activities.
3) Takes measurements, photographs, samples, etc., and assists departmental personnel in the analyses of field data.
4) Provides random sampling, scheduled sampling or continuous monitoring of identified activities as directed, to minimize or preclude environmental damage.

5) Reports violation of Alaska Administrative Codes statutes, regulations or directives issued by the Department. Prepares recommendations for the Regional Engineer, reports and analyses concerning corrective action, and estimates the effects of existing and potential damages to the environment.

6) Represents the Regional Engineer and the Department, as directed, to local governments, industry representatives, state agencies, boards and hearings. Provides coordination as directed to local, state and federal agencies and assists in activities promoting public awareness of environmental problems.

7) Investigates and reports on incidents resulting in environmental damage such as slumping, oil spills, large scale kills of animal and plant life, contamination of water, air or land.

Performs other related duties as assigned.

Minimum Qualifications: A Bachelor's degree from an accredited college in physical, biological science or engineering.

Substitute: Experience with direct involvement in monitoring, analysis, evaluation and reporting on environmental matters may be substituted for the required education on year-for-year basis.

Environmental Field Officer II

Definition: Under direction, of the Regional Environmental Engineer, investigates existing field conditions, to estimate the effects of existing and proposed activities on all aspects of the environment and potentials for air, water and land surface pollution, potential soils modification and marine involvement where indicated. Monitors and reports on developments affecting the environment in the regions to which assigned.

Distinguishing Characteristics: This class is that of the journeyman Environmental Field Officer and is distinguished from the Environmental Field Officer I, which is an intermediate class situated between the Environmental Technician and the journeyman classes.

Examples of Duties: Locates, identifies, analyses, monitors and reports on potential sources of environmental damage within the region to which assigned. By way of example only, sources might include industrial developments, urban expansion and development and utilization activities, waste discharges of all types, including landfills, construction projects, transportation and pipeline developments, and petroleum storage and pumping stations.

In conjunction with the Regional Engineer and the Department, determines potential environmental damage, determines measurements, analyses, which might be taken to determine the extent, nature and/or existence of environmental damage resulting from identified activities.

Takes measurements, photographs, samples, and assists departmental personnel in the analyses of field data.

Provides random sampling, scheduled sampling or continuous monitoring of identified activities as directed, to minimize or preclude environmental damage.

Reports violation of Alaska Administrative Codes statutes, regulations or directives issued by the Department. Prepares recommendations for the Regional Engineer, reports and analyses concerning corrective action, and estimates the effects of existing and potential damages to the environment.

Represents the Regional Engineer and the Department, as directed, to local governments, industry representatives, state agencies, boards and hearings. Provides coordination as directed to local, state and federal agencies and assists in activities promoting public awareness of environmental problems.

Investigates and reports on incidents resulting in environmental damage such as slumping, oil spills, large scale kills of animal and plant life, contamination of water, air or land.

Performs other related duties as assigned.

Knowledge, Skills and Abilities: Knowledge of: physical sciences and/or engineering with emphasis in one of the following: geology, oceanography, hydrology, terrestrial or fresh water biology or sanitary engineering; geologic, oceanographic and biologic sampling equipment and techniques; scientific method.

Basic knowledge of: sources of environmental damage such as industrial developments, urban development, resource utilization, waste discharge, construction projects and transportation developments; principles of ecology.

Skill in: taking geologic, biologic, oceanographic or hydrologic samples, performing limited analysis and reporting results.

Ability to: perform interrelated scientific investigations of environmental matters, collect appropriate samples; gather and analyze data, reason logically and accurately and draw valid conclusions; comprehend written materials; interpret and apply rules and regulations; participate effectively in conferences and interviews; speak and write clearly and effectively; prepare clear and concise reports; establish and maintain cooperative relations with those contacted in the course of the work.

Minimum Qualifications: Graduation from college with a Master's degree in Oceanography, Marine Science, Geological Engineering, Hydrology, Freshwater Biology, or Sanitary Engineering:

OR

Possession of a Bachelor's degree in one of the above or related fields and two years of professional level experience in physical science or engineering with direct involvement in monitoring, analysis, evaluation and reporting on environmental matters.

Substitution: Graduation from college with a Master's degree in general biology or zoology which included 15 semester hours in physical sciences supplemented by an additional six months of professional level experience in physical sciences or engineering may be substituted for the required Master's degree in the above; experience with direct involvement in monitoring, analysis, evaluation and reporting on environmental matters may be substituted for the required education on a year-for-year basis.

D. Training and Certification

Training for water utility personnel, to be conducted by Department staff during FY 77, will include the American Water Works Association's Chlorination Workshop, orientation sessions to discuss provisions of the PWSSP, and operation and maintenance instruction pursuant to operator certification. Orientation sessions to familiarize Department field staff with provisions of the PWSSP are also planned. Training related to the State PWSSP for Department personnel, conducted by outside agencies such as EPA or other States, while not scheduled at this time, is planned.

The 1976 Alaska Legislature passed legislation providing DEC with authority to certify operators of water treatment facilities. Certification will be modeled after standards developed by the National

Association of Boards of Certification and will be classified into grades according to the qualifications of the operator.

E. Career Potential

Definite career opportunities will be available in Alaska's water supply program. Continued establishment of the PWSSP and Village Safe Water Act will provide opportunities for employment mainly in the fields of engineering and the physical sciences. Environmental engineers will be one of the predominating forces in this area as well as chemists, oceanographers, and technical people with monitoring and analyses expertise. As this continues to be a high priority area, the need for highly trained personnel will also continue.

F. Conclusion

As dramatic incidents of drinking water contamination have sent people to hospitals seriously ill because of defects in water supply and distribution systems, the need for a safe, adequate water supply has been highlighted even more as a high priority area. Coupled with long term chronic consequences of consuming substandard water which are frequently not recognized by the public, the Department of Environmental Conservation has embarked on the continuance of upgrading and expanding their water supply program.

The focus of this program will be on preventive measures such as public information and education and construction plan review rather than enforcement, although enforcement activities will continue at least on their present levels.

Village Safe Water Act activities will also continue as a high priority in addition to the federal programs for installing water supply and waste disposal systems in native villages.

Ideally, the major effort to control public water supplies should be made by local government entities. Currently, the State has more resources and organization to manage a water supply control program than do the majority of local governments. Local governments are encouraged to organize and seek authority to administer their own water supply programs.

V. RADIATION

A. Introduction

In 1971, legislative action created the Department of Environmental Conservation. Section 46.03.250 of the statute granted the Department the authority to:

- develop comprehensive policies and programs for the evaluation and determination of hazards associated with the use of radiation, radiation sources, and their amelioration;
- encourage, participate in and conduct studies, investigations, training, research and demonstrations relating to the control of radiation hazard, the measurement of radiation, the effects on health of exposure to radiation and related problems it considers necessary or advisable for the discharge of its duties;
- collect and disseminate health education information relating to radiation protection;
- review plans and specifications for radiation sources submitted under its regulations;
- inspect radiation sources, their shielding and immediate surroundings and records concerning their operation for the determination of possible radiation hazard.

During the first two years of the Department's existence, however, only minimal efforts were made to develop a radiation pollution control program.

In 1973, an agreement was made between the Alaska Department of Health and Social Services and the Department of Environmental Conservation which delegated health-related radiation pollution problems to DHSS. In essence, this agreement gave DHSS responsibility for the entire radiation program.

B. Workforce Profile

The Environmental Health Section of the Division of Public Health, Department of Health and Social Services, currently provides the services of one-tenth of a person-year toward radiation pollution control.

The person involved at this time is a radiation physicist. Program activity is conducted on a very sporadic basis and consists primarily of compliant-oriented radiation pollution investigations.

C. Workforce Projections

Information regarding workforce projections was obtained through interviews conducted with professionals in the field.

In the next five years, one full-time radiation physicist position is expected to develop along with the statutory authority necessary to develop a radiation control program through the Department of Health and Social Services.

D. Training and Certification

Considering the simplicity of the current program and the limited growth anticipated in the future, no current or future training activities are expected to be provided regarding radiation pollution control.

E. Career Potential

Career potential is expectedly going to be extremely limited at the public sector level. However, the possible generation of private sector career opportunities may develop for persons trained as radiation control technicians in response to future uranium mining activities.

E. Conclusion

In summarizing Alaska's radiation pollution control activities, it appears that public health is the principal concern of the program at the present time, and unless major program changes occur, which seems unlikely, public health will continue to predominate program activities in the future.

VI. SOLID WASTE

A. Introduction

Solid waste management in Alaska presents an especially difficult problem. The geographical and climatic aspects and the total land area itself, provides many of these problems. An estimated 144 incorporated municipalities and 250 small villages are scattered over an area of 586,412 square miles. Adding to the difficulties are the minimal transportation facilities which are available.

The physical aspect of solid waste disposal is made difficult by geological and climatic conditions. Perenially frozen ground, permafrost, in the northern part of the state and the high annual rainfall in southeastern Alaska make sanitary landfilling very difficult, if not impossible. Lack of available cover and high groundwater is also a hindrance. More sophisticated disposal methods, such as incineration, are indicated in many areas, but few communities can afford incineration.

Another problem concerns public attitude toward and understanding of solid waste disposal. Refuse disposal is a major municipal problem, but the attitudes of some local authorities and voter apathy have often assigned it the lowest priority. Some of the problem lies in the high costs of proper disposal and some in the lack of public education and technical training. The advent of the Resource Conservation and Recovery Act of 1976 (RCRA) is expected to make some funds available at the state level to develop public education programs and managerial and operator training courses.

Alaska's solid waste outlook, despite these difficulties, is showing remarkable improvement. Approximately 80% of the state's population is served by state permitted facilities. One municipality is shredding their refuse with incineration/heat recovery as the ultimate goal. The largest municipality, Anchorage, is issuing requests for proposals for a shredder/transfer facility initially sized for 800 tons per day, with energy recovery as the ultimate objective. All commercial/industrial development operations in the Arctic are now utilizing incinerators for refuse and sewage sludge and are hauling back scrap metal, tires, batteries, etc., for recycling in accordance with criteria recently established by DEC.

Current plans are to bring the remaining municipal disposal facilities into compliance and under permit; continue to upgrade existing facilities; expand technical assistance and permitting to the rural villages; develop operator and management level training; and assist in implementing RCRA programs in Alaska.

A special problem in Alaska is the abandoned vehicle. Alaska has become the "end-of-the-road" for thousands of automobiles. Sporadic attempts have been made to collect them for shipment south to scrap reclaimers. Two private contractors in Anchorage are currently removing crushed auto hulks from the state, but, this is primarily possible because of large subsides paid by local and state government agencies.

One bright spot on the horizon is the $546,000 in Highway Beautification Act money granted to the Department of Highways this past year for the clean up of abandoned vehicle hulks along highway rights-of-way.

The program is being administered on a district basis by the Department of Highways right-of-way officers. At present, however, the complicated problem of finding a workable definition of an abandoned vehicle is an impediment to the progress of this program. If the legal problems can be overcome, a significant number of abandoned vehicles will be removed from the state. DEC is cooperating with the Department of Highways in identifying locations for stockpiles of these abandoned vehicle hulks, and in some cases is establishing communications with local entities and contractors concerning the existance of the program. As this is a one time project, Alaska will continue to remain an "end-of-the-road" for vehicles transported from other states, unless scrap recycling economics change or firm governmental controls are initiated.

The Department has two proposed approaches to this problem.

1) DEC will cooperate with the Federal Highway Administration, the Alaska Department of Highways, and other state agencies to see that the Highway Beautification Funds are spent as effectively as possible.

2) DEC will push for legislation which would levy a disposal fee on each auto registering in Alaska for the first time.

Other solid waste problems include disposal of hazardous wastes such as pesticides and other toxic chemicals, heavy metals, explosives, radioactive materials, some petroleum wastes, and various industrial wastes. These are not as an extensive a problem in Alaska as they can be in other states. Increasing industrialization and population will cause the problem to grow, however. One area beginning to illustrate this problem is the Kenai Peninsula. The Department, however, has worked closely with the Kenai Peninsula Borough in establishing a

disposal site for selected, potentially hazardous materials. These materials include oil contaminated drilling muds, tank bottoms, and oil spill cleanup materials.

To prevent or reduce other hazardous waste disposal related problems, the Department is pursuing the following approaches:

- Establish a hazardous material classification system and establish regulatory procedures for their disposal;
- Establish minimum disposal site standards for each class of waste material;
- Encourage each borough or local agency to examine the probable industrial developments in their area and the wastes to be generated. The Department would then aid them in locating a suitable disposal site and encourage them to get it officially dedicated for this purpose before the critical time is at hand; and
- Work with EPA in implementing sub-Title C of the RCRA.

B. Workforce Profile

The Department of Environmental Conservation, Terrestrial Programs Section, in conjunction with the Field Operations Section, develops and maintains the state solid waste management program. An equivalent of eight full-time professional staff are involved with solid waste activities. The majority of these are involved in field work. The following table illustrates this workforce by title.

TABLE VI

DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Terrestrial Programs and Field Operations Section
Solid Waste Management
Current (1976) Staffing Level

Position	1976
Engineer	5
Scientist	3
TOTAL	8

The personnel listed in the category "Scientist" include both ecologists and environmental field officers. The engineers include sanitary and soils experts.

The class specifications for ecologists are defined as follows.

ECOLOGIST I, II, III, IV

Definition: Under general direction, supervises, performs or trains in the assessment of the physical, biological and aesthetic impact of major construction and land-use activities on the state's environment; provides recommendations concerning engineering and environmental tradeoffs based on a broad range of multi-disciplinary scientific data.

Distinguishing Characteristics:

Ecologist I: is the entry level training call.

Ecologist II: serves as the intermediate training class.

Ecologist III: is the fully trained journeyman field ecologist class.

Ecologist IV: is the working supervisory class of ecologist.

Examples of Duties: Reviews construction plans, change orders, and reroutes to determine the impact on construction activities on the total environment, including aesthetic impact, impact on the tundra and other vegetation, potential long-term surface and thermal erosion, impact on insect and animal life.

Reviews proposed land-use activities, field operations, and construction site activities to ensure compliance with state, federal, and local laws, regulations, permits stipulations. Ensures minimum environmental degradation from permitted activities.

Reviews restoration, revegetation and reforestation plans. Ensures maximum restoration of the land surface upon completion of construction activities, gravel borrow operation, waste and material disposal sites.

Assists in preventing and/or resolving problems which might arise through human error such as right-of-way vehicle movement, careless dumping of waste materials, indiscriminate tundra tear-up.

Weighs alternatives and activities to determine the optimum environmental and engineering tradeoffs, provides recommendations, based upon a broad range of scientific data to preserve and enhance the state's environment.

Serves in a trainee capacity in one or more of the areas outlined above.

Is in charge of the ecology program; plans individual and collective projects; makes work assignments and reviews on a day-to-day basis; evaluates performance; coordinates projects with other activities; recommends promotions, transfers and demotions; resolves personnel problems and those involving logistics.

Performs other related duties as assigned.

Knowledge, Skills and Abilities. Knowledge of biology, ecology, land and resource management.

Ability to consider alternative courses of action in terms of their damage/benefit ratios and take prompt, effective action; assess proposals in terms of environmental gestalt (including wildlife, flora and esthetic considerations); gather and analyze data; prepare clear and concise reports; work cooperatively with others in remote locations.

Minimum Qualifications: Note: specific positions allocated to these classes may be in the partially exempt service.

Ecologist I: a degree in one of the biological or physical sciences plus one year in environmental field work or research.

Ecologist II: a degree in one of the biological or physical sciences plus two years in environmental field work or research OR a master's degree in one of the biological or physical sciences plus one year of experience in environmental management or research.

Ecologist III: a degree in one of the biological or physical sciences plus four years in environmental field work or research OR a master's degree in one of the biological or physical sciences plus three years of experience in environmental management or research.

Ecologist IV: a degree in one of the biological or physical sciences plus five years in environmental field work or research OR a master's degree in one of the biological or physical sciences and four years of experience in environmental management or research.

Substitute: additional experience in monitoring construction activities, environmental management or environmental research may be substituted for the required education on a year-for-year basis.

NOTE: due to the multi-disciplinary duties assigned this class, a diversified background is preferred, such as a degree in vertebrate biology, with some experience in resource management, landscape architecture, park planning or wildlife protection in addition to environmental monitoring. This is but one example of acceptable experience.

Specific information concerning waste collection and disposal workforce levels was not readily available at the time of this writing; however, estimates based on disposal site permits indicate a disposal site operator workforce of approximately 130 persons.

C. Workforce Projections

Information concerning workforce projections was obtained through on-site and telephone interviews conducted with professionals in the solid waste management field. Of particular assistance was the Department of Environmental Conservation, Solid Waste Program Coordinator.

Workforce increases are expected to include the addition of eight professionals to the existing solid waste workforce. Professionals in the field have indicated that staffing increases will develop over the next five years in response to the implementation of the State Solid Waste Management Plan, and as a result of federal legislation concerning the Resource Conservation and Recovery Act. Increased activity is anticipated involving hazardous wastes.

Specific staffing level projections, by position titles, to 1982, are detailed in Table VII.

TABLE VII

DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Terrestrial Programs and Field Operations Section
Solid Waste Management
Workforce Projections to 1982 (est.)

Position	1976	1977	1978	1979	1980	1981	%/annum turnover (average)	%/annum growth (average)
Engineer	5	7	9	9	10	10	5%	16%
Scientist	3	4	5	5	6	6	5%	16%
TOTAL	8	11	14	14	16	16	5%	16%

C. Training and Certification

At the present time, there is no specialized training available for solid waste personnel, although several needs have been identified.

Sources in the field have suggested that only through the provision of solid waste management training can an effective municipal solid waste management effort be developed. DEC has indicated the need for training at least 15 professional staff in the solid waste field. The Department also anticipates an extensive training program for both municipal decision-makers and for operators of municipal solid waste disposal facilities, which presently is contingent on EPA funding.

D. Career Potential

In view of the workforce increases projected to occur over the next five years at the state level, career opportunities can be expected to develop for highly trained engineers, geologists, hydrologists, and ecologists. Future opportunities are anticipated to emerge in the areas of hazardous waste control, resource recovery, and materials recycling. Many of these areas are possible sources of career opportunities for persons with vocational/technical and two-year degree programs.

F. Conclusion

In overviewing solid waste management, Alaska has, until recently, assigned a low priority to this environmental control area. Increased stringent enforcement of regulations as well as additional regulatory agency efforts will be required when solid waste management increases as a pollution control and abatement area.

Currently, there is a dramatic need for training in solid waste control. This need is expressed by professionals in the field. The need exists on state, local and private sector levels. It would seem that before any major effort could be realized in solid waste management in Alaska, training and a thorough understanding of the basic problems and rationale behind this type of pollution control is necessary.

VII. WASTEWATER

A. Introduction

As prescribed by state law, the Department of Environmental Conservation, Division of Water Programs is responsible for the control of water pollution.

Because Alaska has not experienced wide-scale degradation often prevalent in other states, the primary effort is devoted to the prevention of environmental damage.

The development of regulations is one of the first steps taken by the Department of Environmental Conservation toward prevention or solution of environmental pollution problems. Regarding water pollution control, regulations have been developed which require permitting by DEC of all operations involving the disposal of solid or liquid waste material into Alaskan waters. A permit from the Department must be obtained prior to disposal activities.

Permits are one effective means of water pollution control in Alaska. State regulations require wastewater disposal permits for all commercial or industrial operations. Major industrial sources of water pollution in the state include pulp mills, seafood processors, petroleum product processors, offshore drilling platforms in Cook Inlet, and the trans-Alaska pipeline facilities.

To date, the Department has issued 39 wastewater discharge permits, and several more are in the preparation stage. The DEC works cooperatively with industry in an effort to identify potential sources

of pollution. Industry is advised regarding installation of pollution control devices and equipment. Pollution control for proposed facilities must be submitted for review and approval by Department engineers and scientists. Permits for existing facilities often include compliance schedules.

The Division of Water Programs has identified major objectives it wishes to accomplish. Included are the following:

- Maintain the quality of the water environment such that there is no known adverse effect on the Alaskan public health, fish, wildlife or other aquatic life due to discharge of inadequately treated wastewater or to non-point sources of pollution.

- Reduce the number of wastewater discharges in non-compliance with state and federal requirements from 800 to 550.

- Identify sources and quantity effects of water pollution from dredging and filling, mining, logging, road construction water-related hazards and urban runoff, and develop strategies for their control and prevention.

- Minimize the potential for adverse non-point effects on public well-being and aquatic productivity (fish, shellfish, wildlife, and other aquatic life) resulting from an estimated 12 proposed point-source discharges and 6 existing point-source dischages.

- Minimize adverse impacts on public welfare, fish, shellfish and other aquatic life due to non-point source pollution resulting from an estimated 300 proposed dredge and fill operations, water-based log handling operations, construction activities, and major industrial facilities.

- Help maintain aquatic productivity and minimize human suffering and property damage by reducing the potential for two of Alaska's coastal communities likely to be impacted by Outer Continental Shelf development.

The following is a list of planned activities which summarizes the State Water Pollution Control Program for FY 77.

1. Municipal Construction Grants. Construction of areawide wastewater collection and treatment systems is the highest priority of the Water Pollution Control Program for FY 77. With the exception of $100,000 all of FY 76 EPA funds have been reallocated to municipalities, providing grants of 75% of eligible project costs. These federal funds are to be matched by grants of approximately $2.2 million from State General Obligation Bond funds (based on 12.5% of eligible cost). Funds are to be provided to assist communities in developing plans for eliminating raw sewage discharges and improving existing facilities. Contingent upon additional federal funds, construction of additional facilities would be initiated in FY 78.

   In addition to construction grants for treatment systems, the state will pay, as funds are available, up to a maximum of 50% of the eligible cost for wastewater collection systems.

2. Permits. As previously mentioned, the waste disposal permits system has proven to be an effective tool in ensuring compliance with state water quality laws and regulations.

   The major emphasis will be placed on issuing permits to those facilities which are involved with drilling for and recovery of petroleum products. These will include industries which discharge wastes onto the land or into the groundwater and will include petroleum facilities.

   In addition to state waste disposal permits, the Water Pollution Control Program (WPCP) staff will continue to coordinate with other Department programs and review and comment about permits proposed by the U.S. Coast Guard, U.S. Army Corps of Engineers, and other State agencies for projects involving navigable waters, tide land leases, gravel mining operations and water extractions as they may relate to water quality control.

3. Enforcement. The WPCP has established a strong enforcement activity over the past several years. It will be maintained during FY 77. Enforcement of oil and other pollution violations is a major effort and includes an investigation of reported spills. Disposition of each case is carefully reviewed and frequently includes monetary settlements in lieu of restoration of environmental damages or court action or both. Oil pollution violations receive significant press coverage, an effective public education tool.

Records kept by the Department show that for the period of FY 72 through the third quarter of FY 76 there were 1296 reported spills resulting in over one and a half million gallons of oil spilled in Alaska. During that period more than $600,000 was collected in settlements for damages.

A significant effort in tnis activity which will be continued in FFY 77 is the enforcement of other water pollution violations. These include problems with overflowing or inadequately treated sewage, plan review and permit requirements, and illegal installations. Enforcement actions begin with the field staff of the regional offices, with back-up from the central office. They will continue to work with violators to bring about compliance. However, if satisfactory progress is not made within a reasonable time, they refer the matter to the central office for further enforcement.

4. Plan Review. Plan review is the keystone of the WPCP's preventive activities. Engineering plans and specifications for all wastewater treatment works are required to be reviewed and must be approved by the Department prior to construction. This includes plans for municipal and industrial wastewater treatment works and the waste disposal aspects of camps, hospitals, schools, trailer courts, State public works projects, and subdivisions. Plans for wastewater treatment works of federal facilities will continue to be reviewed. Comments will be provided to the submitting federal agency to ensure that they comply with State laws and regulations. All plans will be coordinated with other Department programs as appropriate to insure consideration is given to the overall environmental concerns.

5. Technical Assistance. Emphasis will be placed on assisting municipal officials understand the need for environmental improvements and providing them with direction and guidance to develop plans for adequate wastewater treatment and disposal facilities. Staff from the regional offices will assist communities to solve technical problems that may arise in wastewater treatment systems.

The expenditure of millions of State and federal dollars for municipal wastewater treatment works must be followed by the assignment of competent and adequately trained operators. Therefore, encouragement and assistance will continue to be given to educational institutions to ensure that federal training grants will continue to support these needed programs. Coordination and curriculum guidance for those receiving grants, and for developing substantive training programs, will support the educational institutions. Support will continue to be given to the mandatory operator certification program.

6. Surveillance and Monitoring. The credibility of the WPCP is dependent on effective surveillance and monitoring to ensure compliance with State water quality control laws and regulations, and wastewater disposal permit requirements. In addition to visual observation of receiving waters, samples will be collected and analyses performed for parameters specified in water quality standards and wastewater disposal permits. Most of this activity will be conducted by personnel in the regional office, with the central office providing technical support and follow-up for special investigations.

   All major municipal treatment plants will be inspected at least once during FFY 77. The facilities in Anchorage, Fairbanks, and Juneau will be inspected three times each during FFY 77. In conjunction with technical assistance activity, surveillance activities will be provided, although the emphasis in the surveillance will be to provide guidance and to indicate to the municipalities that the Department is interested in assisting them solve problems.

   Periodic inspections will be made of non-municipal wastewater treatment systems to give guidance and to monitor operation of the facilities. Those facilities on the pipeline route (approximately 30) will be monitored several times during the year. Approximately 20 other non-municipal facilities will be inspected.

   Emphasis on surveillance and monitoring also will be given to ensure industrial wastewater disposal facilities are in compliance with State permit stipulations.

   Surveillance in connection with oil spill prevention and coordination in removal of spilled oil is part of this activity and will be continued by the regional staffs with back-up by the central office.

7. Laboratory Support. The Department of Environmental Conservation has established a Technical Services Program to provide needed laboratory support to the WPCP, Air Pollution Control Program, and Water Supply Program. Effective laboratory support will be established before FY 77 to support the WPCP. The support will include interagency agreements and contracts with other entities for services.

8. Basin and Facility Planning. The WPCP will prepare plans for the five remaining basins in the State during the first half of the fiscal year 77. In addition those plans completed in draft form will be finalized.

   Facility plans will be prepared by the applicant for a construction grant and reviewed and approved by the WPCP staff. Approved facility plans are a prerequisite to receipt of a State or Federal wastewater treatment works grant. Great emphasis is placed on facility plans to ensure the orderly and cost-effective development of wastewater collection and treatment facilities.

9. Waste Oil Problem. A partial solution to the waste oil problem has been the Department's adoption of regulations and implementation of a surface oiling permit system. These regulations prevent water pollution, allow the disposal of waste oil, and alleviate air pollution problems. The WPCP, in coordination with other Department programs, State agencies, and industry, plans to investigate alternative solutions for the disposal of waste oil. Sources and amounts of waste oil generated in Alaska will be determined. Unique waste oil problems and unique regions of the State may affect the alternatives chosen. Possible alternatives to be considered include deep well injection, export, incineration, and use as a fuel.

   Inspections will be conducted at abandoned canneries, docks, mines, etc., throughout the State to determine the potential hazard presented by abandoned oil storage facilities. This effort was initiated during FY 76 and should be completed by the thrid qurter of FY 77. Many of these facilities have been abandoned for three or more decades. Oil is stored in deteriorating tanks and, in many cases, on rotting piling or eroding foundations. Several major oil spills have resulted from these abandoned facilities. Recommendations for removal of potential oil spill hazards will be made.

10. Pipeline Impact. The Department has augmented substantially its staff to control effects to the environment due to construction of the trans-Alaska pipeline. At least 50 percent of this staff effort is involved in preventing and abating water pollution and related problems. Activities will include surveillance and inspection for waste disposal facilities at construction camps, roads, pipelines, pumping stations, and terminal construction. This will be the last construction season for all the pipeline facilities.

11. Spill Prevention and Control Countermeasure (SPCC) Plan. In view of federal regulations concerning SPCC, which provides for substantial State participation, the WPCP activities will continue to be expanded. This will enable the State to effect oil spill prevention and control measures for federal facilities. It is anticipated that a significant reduction in oil spills will result from review of these plans.

    A Statewide Contingency Plan for Spill of Oil and Hazardous materials is being redrafted. During the Transition Quarter this Statewide Plan will be finalized and Regional Contingency Plans will be adopted for the ADEC Regions during FY 77.

12. Statewide Water Quality Management Planning (208). Statewide water quality management planning will proceed from the first planning phase included in the Basin Water Quality Management Plans. Because of limited funds and resources, the plan will primarily address, but not be limited to non-point sources of pollution in Alaska. Identification of controls for non-point sources of pollution (e.g.,logging practices, urban runoff, storm runoff, road construction, land development, etc.) will receive substantial effort during FY 77.

13. Program Management. Management of the WPCP will be provided through development and implementation of plans, policies, and procedures. Review and development of federal and state legislation, regulations, guidelines, policies, and procedures is fundamental and will continue.

B. Workforce Profile

Currently the Water Programs Division of DEC maintains a total workforce of 18 people in wastewater. This majority of the workforce is assigned to Juneau. Some personnel have been allocated to field operation offices located across the state. The following table details the workforce by position.

TABLE VIII

DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Water Programs
Current (1976) Staffing Level

Position	1976
Engineer	14
Scientist	4
TOTAL	18

Private sector involvement in this area includes both municipalities and Alyeska Pipeline Service Company. The current workforce of municipalities may be measured through the certificates awarded. The following table details the wastewater operator certificates.

TABLE IX

STATE OF ALASKA

Voluntary Certification Program
Wastewater Treatment Plant Operators
Current (1976) Certification Status

Class	Number of Certificates
1	17
2	22
3	4
4	3
TOTAL	46

Alyeska Pipeline Service Company maintains a wastewater operator workforce which includes 90 operators. These operators provide wastewater treatment to pipeline facility sites along the construction route area.

C. Workforce Projections

An increase in state agency staffing level has been indicated by DEC. This increase will result primarily from an effort to bring existing facilities into compliance with state and federal standards. The following table details the projected workforce to 1982 by position.

TABLE X

DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Water Programs
Workforce Projections to 1982 (est.)

Position	1976	1977	1978	1979	1980	1981	%/annum turnover (average)	%/annum growth (average)
Engineer	14	15	15	16	16	16	5%	3%
Scientist	4	5	6	7	8	8	5%	15%
TOTAL	18	20	21	23	24	24	5%	6%

Personnel included in the position "Scientist" include chemists, hydrologists and lab technicians. The "Engineering" category is made-up of primarily civil and sanitary degreed engineers.

Alyeska Pipeline Service Company, during peak operations, employs approximately 90 wastewater treatment operators. This number has been estimated to decline to six or ten within the next five years as the pipeline construction phase is completed.

The anticipated decrease in the operator workforce will undoubtedly impact statewide workforce figures.

D. Training and Certification

The 1976 Alaska Legislature passed legislation providing DEC with authority to certify operators of wastewater facilities. Certification will be modeled after standards developed by the National Association of Boards of Certification (ABC) and will be classified into grades according to the qualifications of the operator. Specific numbers concerning operators to be trained have yet to be developed as certification is such a recent development. Specific certification requirements for future training activities will be modeled after the requirements (ABC classification system) as depicted in Table XI.

TABLE XI

WATER/WASTEWATER PERSONNEL CLASSIFICATION SYSTEM

Formal Education & Experience Requirements

Type of Facility/System	Operator In Training		OPERATOR CLASSIFICATION									
			I		II		III			IV		
	Educ.	Oper. Exper.	Educ.	Oper. Exper.	Educ.	Oper. Exper.	Educ.	Oper. Exper.	DRC Exper.	Educ.	Oper. Exper.	DRC Exper.
Wastewater Collection (WWC)	12	(a)	12	1	12	3	14	4		16	4	
Wastewater Treatment (WWT)	12	(a)	12	1	12	3	14	4	(2)	16	4	(2)
Water Distribution (WD)	12	(a)	12	1	12	3	14	4		16	4	
Water Treatment (WT)	12	(a)	12	1	12	3	14	4	(2)	16	4	(2)

DRC - Direct Responsible Charge (active on-site charge and performance of operation).

(a) Three months operating experience or completion of an approved basic training course. It is recognized that the position operator-in-training (OIT) is not a legally required position. It is included here as a method for new entrants in the field to enter into the certification program.

Regarding Table XI on the previous page, the following is noted:

- For Class I certification, the minimum experience requirement is one year of experience in the appropriate type of plant or system, without substitution.
- For Class II, III, and IV certification, substitutions may be made for required experience, but with the limitation that 50% of all stated experience requirements (both operating and DRC) must be met by actual on-site operating experience in the appropriate type of plant or system.
- These experience requirements should be obtained under the supervision of a certified operator or under an organized on-the-job training program.
- At least half of the Operating Experience requirements for WWT and WT Class III and IV certification, even after substitution, must be appropriate DRC experience.
- At least half of the Operating Experience requirement for Class III certification must be appropriate experience in Class II or higher.
- At least half of the Operating Experience requirement for Class IV certification must be appropriate experience in Class III or higher.
- Operators practicing prior to the effective date of the certification program may become certified without taking the examination. This certification is valid for the level certified only. The operator may not take a position requiring a higher degree of certification without examination, but may transfer to another plant at an equivalent level.

E. Career Potential

Because of continued construction of new facilities and the modification of existing treatment facilities, job opportunities should be plentiful for plant operators. Occupational upward mobility is expected to be made available through the certification program which will provide a certain degree of professionalism to the operators in the field.

As a result of growth at the state regulatory level, career opportunities are expected to be available for personnel holding degrees in engineering, hydrology, and chemistry.

F. Conclusion

Water pollution affects every Alaskan as well as the aquatic environment to varying degrees. Aesthetic damage to the aquatic environment is often the most evident detrimental effect of this pollution. However, water pollution also causes more severe, but less evident effects upon the aquatic food chain and thus upon public health. These adverse effects need to be eliminated or at least reduced so that the beneficial uses of the water can be protected.

The Department of Environmental Conservation realizes that without a vigilant and effective water pollution control program with enforcement activities and an emphasis on prevention, Alaska could develop the pollution conditions prevalent in some other states. A large number of Alaskans cling to the attitude of "pollution is impossible because of the great quantities of water." Therefore, DEC will continue to support a strong and effective water pollution control program in order to prevent the problems faced by other states. Through this program it is hoped that Alaska can remain relatively unpolluted so that a clean environment can remain a way of life and continue to be enjoyed.

After reviewing the information in full, it is obvious that more stringent enforcement of existing legislation and technological advances in the field of wastewater treatment are going to create many jobs for treatment plant personnel in the next five years. These positions will include plant operators, maintenance personnel, and a basic labor force.

It has been suggested by sources in the field that the proper training and certification of operator personnel may increase the efficiency of a treatment plant by 50%. This would indicate that operator training in the future will become an important component in the effort to eliminate wastewater pollution in Alaska.

VIII. ENERGY

A. Introduction

Within the Department of Commerce and Economic Development, the Division of Energy and Power Development (DEPD) has been established as the principal agency responsible for the development of a planned, integrated system of power development in Alaska.

Power development is one part of a three-part approach to meeting Alaska's energy and power needs and opportunities. The other two are energy conservation and energy research and development. The overall objective of the Energy and Power Development Program is to ensure adequate energy and power at the least cost to the consumer by developing the energy resources of the State of Alaska, by using these resources in the most efficient and effective manner, by providing necessary research and development to support and improve the energy and power programs within the state, and thereby strengthen the quality of life of Alaskans.

Specific goals, objectives and strategies of the Division of Energy and Power Development are illustrated in the following charts.

B. Workforce Profile

Information concerning workforce levels was obtained through interviews conducted with professionals in the field. Of particular assistance was Mr. William C. McConkey, Director, Division of Energy and Power Development, Department of Commerce and Economic Development. Organizational charts for this division are presented on the following pages.

Figure 6. DIVISION OF ENERGY & POWER DEVELOPMENT, Organizational Chart

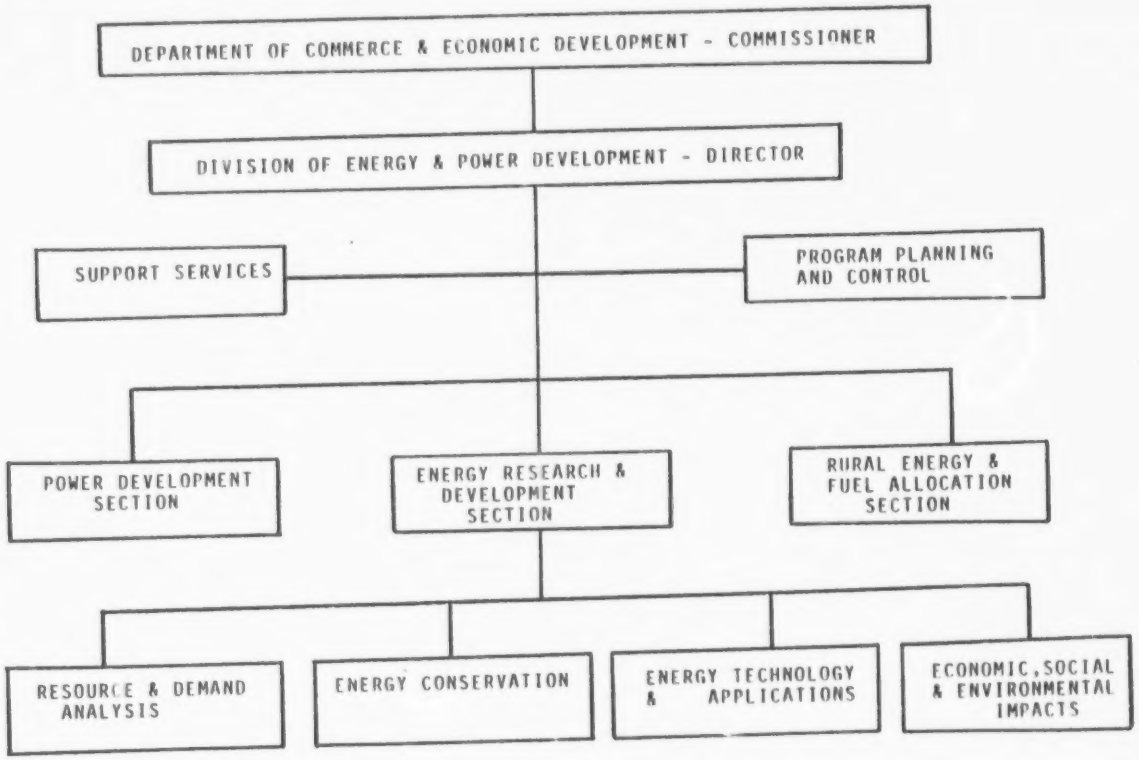

DEPARTMENT OF COMMERCE & ECONOMIC DEVELOPMENT - COMMISSIONER
DIVISION OF ENERGY & POWER DEVELOPMENT - DIRECTOR
SUPPORT SERVICES
PROGRAM PLANNING AND CONTROL
POWER DEVELOPMENT SECTION
ENERGY RESEARCH & DEVELOPMENT SECTION
RURAL ENERGY & FUEL ALLOCATION SECTION
RESOURCE & DEMAND ANALYSIS
ENERGY CONSERVATION
ENERGY TECHNOLOGY & APPLICATIONS
ECONOMIC, SOCIAL & ENVIRONMENTAL IMPACTS

Figure 7. ALASKA ENERGY AND POWER DEVELOPMENT PROGRAM STRUCTURE

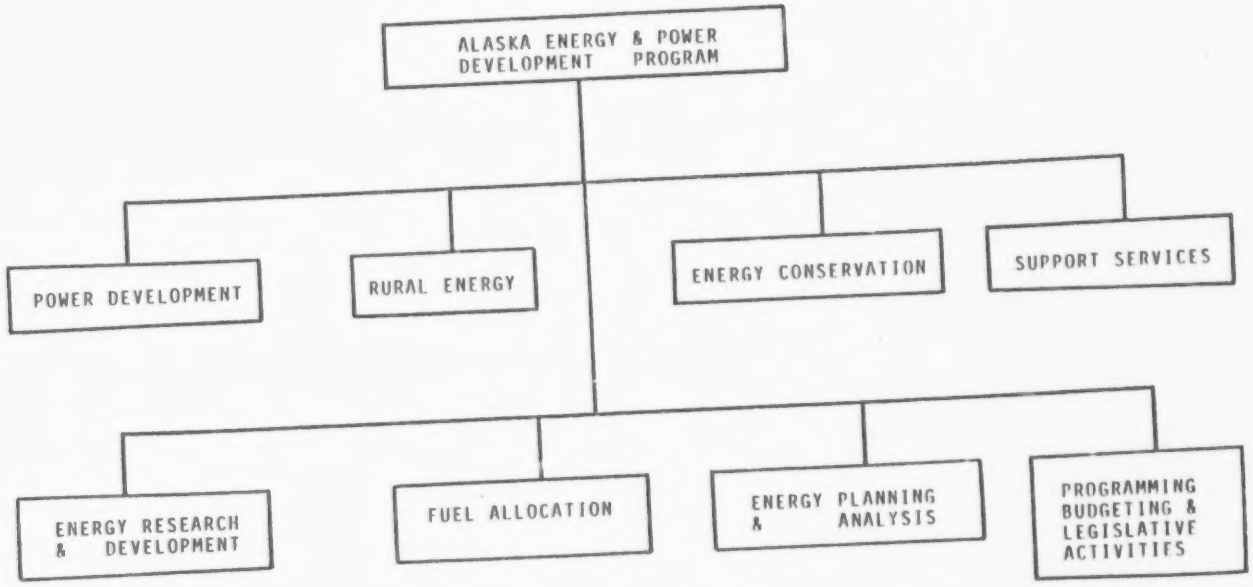


Figure 8. E N E R G Y & P O W E R D E V E L O P M E N T

GOALS, OBJECTIVES AND STRATEGIES

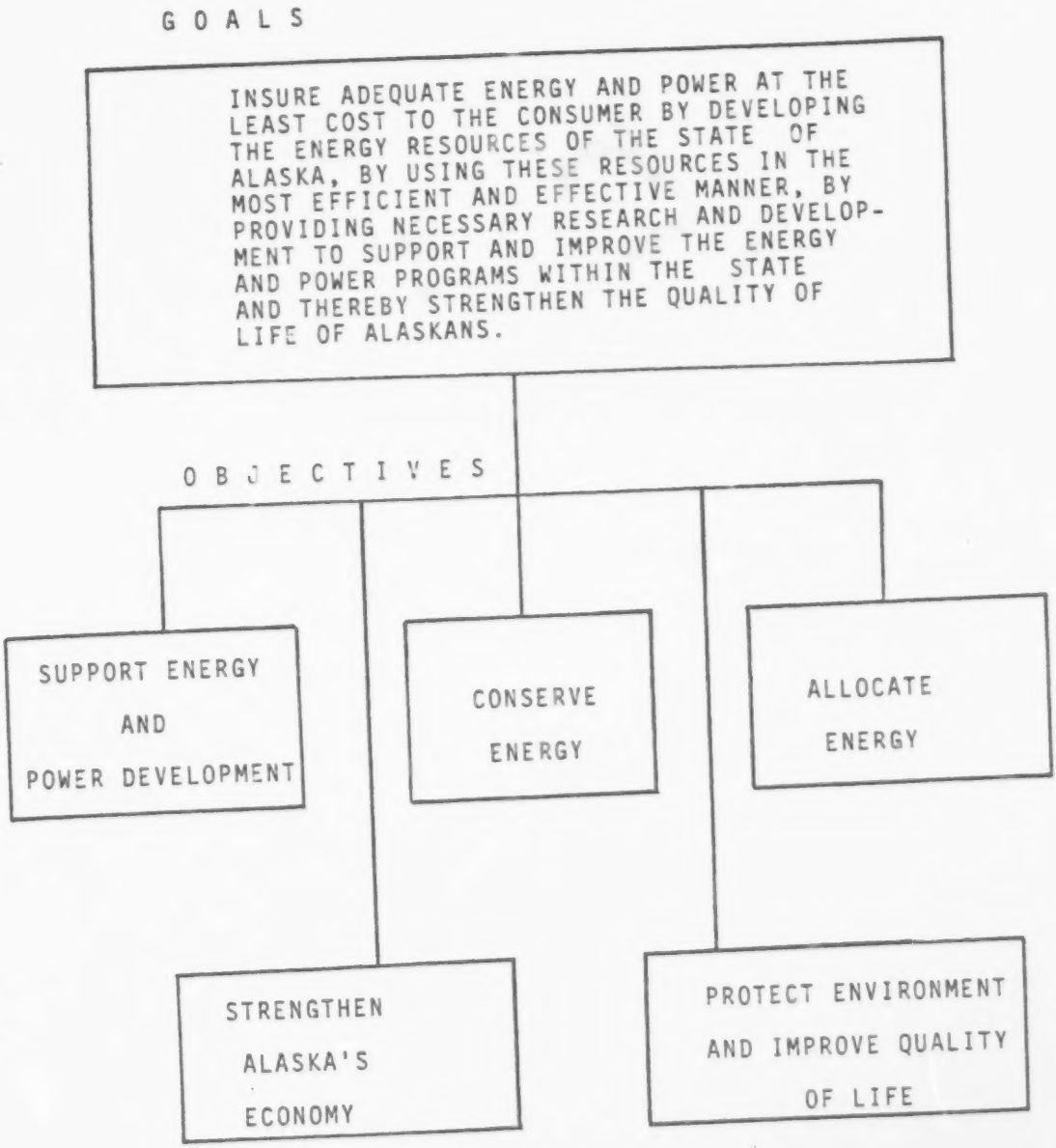

G O A L S
INSURE ADEQUATE ENERGY AND POWER AT THE LEAST COST TO THE CONSUMER BY DEVELOPING THE ENERGY RESOURCES OF THE STATE OF ALASKA, BY USING THESE RESOURCES IN THE MOST EFFICIENT AND EFFECTIVE MANNER, BY PROVIDING NECESSARY RESEARCH AND DEVELOPMENT TO SUPPORT AND IMPROVE THE ENERGY AND POWER PROGRAMS WITHIN THE STATE AND THEREBY STRENGTHEN THE QUALITY OF LIFE OF ALASKANS.
O B J E C T I V E S
SUPPORT ENERGY AND POWER DEVELOPMENT
CONSERVE ENERGY
ALLOCATE ENERGY
STRENGTHEN ALASKA'S ECONOMY
PROTECT ENVIRONMENT AND IMPROVE QUALITY OF LIFE

Figure 8. (Continued)

OBJECTIVE	SUPPORT ENERGY AND POWER DEVELOPMENT
STRATEGIES	° Identify Needs ° Assess Technologies ° Identify Resources ° Assist in Energy Production
FY 1977 TARGETS	° Complete preliminary assessment of energy demands ° Complete preliminary assessment of energy resources ° Begin work on power development plan ° Begin detailed assessment of alternate technologies ° Begin detailed assessment of applications
FY 1978 TARGETS	° Publish Power Development Plan ° Start evaluation of Geothermal & Solar Resources ° Start cost & feasibility studies of Causeway/Tidal project ° Begin study of coal extraction & conversion technologies. ° Assess power storage & transmission technologies ° Begin study of waste heat recovery ° Complete testing of small wind energy systems
FY 1979 TARGETS	° Start construction of Geothermal-electric Demonstration Plant ° Study feasibility, install, and test small fuel cell in remote village

Figure 8. (Continued)

OBJECTIVE	CONSERVE ENERGY
STRATEGIES	° Assess Technologies and Systems ° Apply Technologies and Systems ° Motivate Consumer Conservation
FY 1977 TARGETS	° Complete assessment of conservation technologies ° Begin promotion of conservation guideline use in communities ° Publish state government conservation plan ° Initiate Operation Outreach ° Start Advocates Program
FY 1978 TARGETS	° Conduct seminar on conservation technology applications ° Begin study of energy conservation technology applications to mineral development, transportation, and other industries
FY 1979 TARGETS	° Perform study of en-use conservation technologies applicable to Alaska ° Complete studies of application of energy conservation techniques to industries

Figure 8. (Continued)

OBJECTIVE	ALLOCATE ENERGY
STRATEGIES	° Manage State Set-Aside ° Constituent Assistance ° Input to National Policy
FY 1977 TARGETS	° A continuing program, responding as needed
FY 1978 TARGETS	° A continuing program, responding as needed
FY 1979 TARGETS	° A continuing program, responding as needed

Figure 8. (Continued)

OBJECTIVE	STRENGTHEN ALASKA'S ECONOMY
STRATEGIES	° Identify Energy Intensive Industrial Opportunities ° Enhance Recovery of Energy Resources ° Support development and improvement of industry/ commerce through energy applications
FY 1977 TARGETS	° Begin study of energy intensive industrial prospects ° Begin study of geothermal application to fisheries ° Conduct seminars on energy applications
FY 1978 TARGETS	° Complete energy intensive industry study ° Begin study of oil and gas recovery enhancement applications ° Begin study of geothermal, solar, and waste heat applications to agriculture and aquaculture ° Begin coal development study ° Develop a data bank of energy technologies applications
FY 1979 TARGETS	° Complete study of oil and gas recovery enhancement applications ° Complete system studies of geothermal, solar, waste heat technologies to agriculture/aquaculture

Figure 8. (Continued)

OBJECTIVE	PROTECT ENVIRONMENT & IMPROVE QUALITY OF LIFE
STRATEGIES	° Assess Environmental/socio/economic implications of energy activities ° Identify mitigating options to minimize negative impacts
FY 1977 TARGETS	° Begin studies defining quality of life baseline and socio/economic impact of energy program ° Begin study of mining reclamation
FY 1978 TARGETS	° Begin study of socio/economic and environmental effects of energy industries - including secondary energy effects
FY 1979 TARGETS	

At the present time, the energy program is staffed by five full-time professionals and supplemented by nine temporary positions. These full and part-time staffing positions are illustrated in the following table by educational disciplines.

TABLE XII

DEPARTMENT OF COMMERCE AND ECONOMIC DEVELOPMENT

Division of Energy and Power Development
Current (1976) Staffing Level

Position	1976
Engineer	1
Scientist	4
Specialist	3
Volunteer	6
TOTAL	14

It should be noted that personnel listed as volunteers are temporary personnel working through the federal ACTION volunteer program. In addition to the six temporary volunteer positions, one conservation specialist and two scientists are considered temporary positions.

Total full-time staff involves two social science professionals, with Bachelor of Science and Master's backgrounds, one journalism professional on the Bachelor's level, one civil engineer and one Master's level economics professional.

C. Workforce Projections

Workforce projections are based on the professional judgement of personnel in the field.

Recognizing that the recent development of energy agencies is, in effect, a response to the realization that the majority of the Nation's energy is being produced through the use of finite resources, also realizing that no overall solution to this problem is expected to develop in the foreseeable future, it would seem appropriate to assume that the activities of such energy related agencies can be expected to increase as finite resources decrease and energy becomes increasingly important to the overall survival of mankind.

Specific future activities which are expected to necessitate additional workforce resources include energy conservation, fuel allocation, energy planning and analysis, and energy research and development.

The following table provides workforce projections by position title over the next five years.

TABLE XIII

DEPARTMENT OF COMMERCE AND ECONOMIC DEVELOPMENT

Division of Energy and Power Development
Workforce Projections to 1982 (est.)

Position	1976	1977	1978	1979	1980	1981	%/annum turnover (average)	%/annum growth (average)
Engineer	1	1	2	2	2	2	n/a	10%
Scientist	3	3	4	4	5	5	n/a	12%
Specialist	1	1	2	3	4	4	n/a	37%
TOTAL	5	5	8	9	11	11	n/a	19%

It should be noted that part-time personnel have not been included in this workforce projection.

In noting the 37 percent increase in personnel in the "Specialist" category, care should be given to the fact that this workforce increases from a single person to only four people in the next five years. These persons will include one conservation specialist, one systems specialist, and one sociologist specialist.

Positions added in the "Scientist" category include one industrial economist and one geologist.

D. Training and Certification

At this time no training efforts have been developed at the public or private level. In the future, public education is expected to be major component of the energy conservation program. Although specific training methods are not yet developed, planned efforts include motivation of consumer conservation, promotion of conservation guideline use in communities, and the provision of seminars on conservation technology application.

It should be noted that formal education for engineers, scientists, and conservationists is conducted through the University of Alaska.

E. Career Potential

Career opportunities are expected to develop over the next five years as a result of increased energy research and conservation activities. Highly trained engineers, scientists, and conservationists will be needed to develop and implement energy resource and conservation plans. Career opportunities may emerge for non-degreed vocational/technical personnel in the areas of resource recovery and energy conservation.

F. Conclusion

In reviewing the energy situation in Alaska, it becomes increasingly apparent that program activity in this area is extremely important at the present time and will continue to be a high priority in the future. Alaska is considered the Nation's major storehouse of oil, gas, coal, hydro-power potential, and possibly uranium. At the same time, Alaska's climate and transportation difficulties makes providing energy and power an expensive and difficult process. Only through extensive planning, management and research can the power production potential of Alaska be realized.

Selected Post Secondary Institutions
With Formal Environmental Energy Programs

The subarctic climate and sparse population of Alaska result in unique academic and research potential. Some areas of the State are rapidly developing their natural resources, while major adjacent areas are essentially wilderness. This lends itself to controlled studies of the effect of man on his environment, a situation not available in most geographical areas of the country. Recent decisions on the Trans-Alaska Pipeline and the Alaska Native Land Claims Settlement have emphasized the need for maximum environmental control and protection.

The leading institution of environmentally-related programs is the University of Alaska. It consists of several senior and community level institutions as well as various related or affiliated research facilities, among them the Environmental Quality laboratories, the Institute of Social and Economic Research, the Institute of Water Resources, and the Forest Soils Laboratory.

Academic programs available include Land Resources, Wildlife Management, Oceanography and Ocean Engineering, Water Resources, Mining Engineering, Civil Engineering, Arctic Engineering, Engineering Management and Science, Biology, Chemistry, and others.

On the following pages two of the programs and the University of Alaska, Fairbanks and one of the programs at Kenai Community College are examined in detail.

SENIOR INSTITUTIONS

University of Alaska
Fairbanks, Alaska

Program: Natural Resources Management (B.S., M.S.) with master emphasis in Forest Management, Soil Management, Parks and Recreation, Agriculture, Watershed Management, and Land Use Planning.

Hours required for major: Semester - (B.S.) 64, (M.S.) 30 with thesis, 35 without thesis.
Program Inception: (B.S.) 1971, (M.S.) 1977
Staff Size: Nine full-time persons, with 38 supporting staff.
Enrollment: (B.S.) 48, (M.S.) 9
Graduates (1976): not available
Placement: not available
Graduate Work: not available

Courses

Conservation of Natural Resources
Agricultural Concepts and Techniques
Natural Resources Measurements
Introduction to the Forest System
Introduction to Watershed System
Soils
Land Use Planning
Principles of Outdoor Recreation Management
Principles of Ecology
Principles of Aniamal Population Dynamics and Management
Domestic Plants
Domestic Animals
Natural Resource Policies
Natural Resource Legislation
Plant Propagation
Plant Ecology
Solid Waste and Air Pollution
Cold Lands
Man and Nature
Geomorphology
Minerals and Man
General Oceanography
Wetlands
Forest and Tundra
Fisheries and Their Management
Water Pollution Biology
Regional Planning

Program: Environmental Quality Engineering (M.S.), Environmental Quality Science (M.S.)

Hours required for major: Semester - 30
Program Inception: 1967
Staff Size: Two full-time professionals with support from one to two temporary persons
Enrollment: 12
Graduates (1976): 5
Placement: Approximately 99%
Graduate Work: not available

Courses (Selected)

Environmental Quality Science Measurements
Engineering Management of Water Quality
Solid Waste and Air Pollution
Environmental Quality Evaluations
Chemical and Physical Water and Wastewater Treatment Process
Biological Treatment Processes
Genetics
Principles of Ecology
General Microbiology
Marine Ecology
Water Resources Engineering
Arctic Engineering
Surface Water Dynamics
Environmental Hydrodynamics
Coastal Engineering
Economic Analysis and Operations
Glaciology
Marine Geology
Stochastic Processes
Estuarine Dynamics
Introduction to Biological Oceanography

COMMUNITY COLLEGES/TECHNICAL INSTITUTIONS

Kenai Community College
Kenai, Alaska

Program: Water/Wastewater Technology (A.A.S., Certificate)

Hours required for major: Semester - (A.A.S.) 60, (Certificate) 30
Program Inception: 1975
Stass Size: One full-time and one part-time instructor (1 Ph.D.)
Enrollment: 25-30
Graduates (1977): (A.A.S.) 2, (Certificate) 3
Placement: not available
Graduate Work: not available

Courses

Introduction to Sanitary Chemistry
Sanitary Chemistry I
Sanitary Microbiology
Wastewater Operations I, II
Wastewater Math

State Legislation

ALASKA GENERAL

TITLE:

Department of Environmental Conservation Act
Alaska Statutes 44-46

PURPOSE:

To provide for the creation of a Department of Environmental Conservation and an Environmental Advisory Board.

DEFINITIONS:

ADMINISTERING AUTHORITY:

Department of Environmental Conservation
Environmental Advisory Board

AUTHORIZATIONS:

To coordinate and develop policies and plans related to state environment;
To promulgate and enforce regulations regarding air, land, water and other pollution;
To make recommendations, review, and serve as a forum in environmental matters.

ALASKA GENERAL

TITLE:

Water, Air and Environmental Conservation Act
Alaska Statutes 46-3

PURPOSE:

To provide for the conservation, improvement and protection of natural resources and environment and control water, land and air pollution, in order to enhance the health, safety and welfare of the people of the state.

DEFINITIONS:

1. Air contaminant
2. Air pollution
3. Atomic radiation
4. Broadcast chemicals
5. Commissioner
6. Department
7. Electronic product
8. Electronic product radiation
9. Industrial waste
10. Motor vehicle
11. Municipality
12. Other wastes
13. Person
14. Pesticide
15. Pollution
16. Radiation
17. Radiation source
18. Sewage
19. Sewer system
20. Standard
21. Treatment works

ADMINISTERING AUTHORITY:

Department of Environmental Conservation

AUTHORIZATIONS:

To review and appraise all state agency activity in environmental area;
To undertake surveys and analyses regarding pollution;
To enter and inspect property in enforcement of the act;

AUTHORIZATIONS (Con't)

To act as the state lead agency in various environmental areas;
To issue regulations pursuant to the act, particularly concerning air, land, and water pollution, pipeline construction, public water supplies, sewage and waste disposal, solid waste disposal, radiation sources, pesticides, and other matters;
To administer water supply and sewage system grants;
To develop a statewide environmental plan;
To establish water quality standards;
To administer pollutant discharge permit system;
To issue new source air pollution permits;
To license pesticide applicators.

PROHIBITED ACTS:

To pollute or add to pollution of air, land, subsurface land, or water of the state;
To operate or construct a sewage system or treatment works without approval and permit;
To use pesticides in harmful manner;
To cause oil pollution on land or water;
To pollute water from vessels;
To create or maintain air, land or water nuisances.

PENALTIES:

General pollution violations - fines of up to $25,000 and one year imprisonment; civil damages of from $5,000 to $100,000.
Willful violations - fines of up to $1,000 and one year imprisonment.
Radiation violations - fines of up to $100 and six months imprisonment
Liability for restoration costs also imposed.

ALASKA WASTE WATER

TITLE:

Operator Certification Law
Alaska Statutes 46-30

PURPOSE:

To provide for the certification of water and waste water operators, and for training such operators.

DEFINITIONS:

1. Certificate
2. Departmen+
3. Potable water supply system
4. Waste water system

ADMINISTERING AUTHORITY:

Department of Environmental Conservation
Water and Waste water Works Advisory Board

AUTHORIZATIONS:

To classify all potable water and waste water systems;
To establish an operator training program;
To require all potable water and waste water systems to be operated by certified personnel within two years of act;
To issue regulations pursuant to the act relating to classifications, examinations and certification.

CERTIFICATION OR LICENSING:

All potable water and waste water systems operators must be certified in class corresponding to the facility. Examinations for new operators; certify existing operators without examination.

PROHIBITED ACTS:

To operate facility without properly certified operators;
To act as an operator without proper certification.